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CONTENTS

PLANNING AND PLAN IMPLEMENTATION

Management of Reserves in Planning Analyzed (Ye. Z. Mayminas, Ye. A. Ivanov; EKONOMIKA I MATEMATICHESKIYE METODY, May-Jun 81)	1
New Statute on Counter Planning in 11th Five Year Plan (EKONOMICHESKAYA GAZETA, Jun 81)	19

INVESTMENT, PRICES, BUDGET AND FINANCE

Statistical Analysis of Industrial Fixed Capital Explained (V. Andreyeva; VESTNIK STATISTIKI, Jul 81)	24
New Classification of Distribution Costs Sought (Kh. Shadiyev; VESTNIK STATISTIKI, Jul 81)	34
Output-Capital Ratio Discussed (A. Vetrov; VESTNIK STATISTIKI, Jul 81)	36

REGIONAL DEVELOPMENT

Party Secretary Discusses Development of ASSR (A. U. Modogoyev; EKONOMICHESKAYA GAZETA, Jun 81)	42
Economic Development of Far East (Valeriy Chichkanov; SOVETSKAYA LITVA, 5 Jun 81)	46
New Planning Institute for Highways Established (F. I. Asadov Interview; BAKINSKIY RABOCHIY, 12 Jun 81) .	48

INTRODUCTION OF NEW TECHNOLOGY

Statistics in Technological Potential Analysis (K. Reshetinskiy, O. Savel'yeva; VESTNIK STATISTIKI, Jul 81)	51
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PLANNING AND PLAN IMPLEMENTATION

MANAGEMENT OF RESERVES IN PLANNING ANALYZED

Moscow EKONOMIKA I MATEMATICHESKIYE METODY in Russian No 3, May-Jun 81 pp 456-473

[Article by Ye. Z. Mayminas and Ye. A. Ivanov (Moscow): "Problem of Reserves in Planning"*)

[Text] Introduction

The "Basic Directions of USSR Economic and Social Development in 1981-1985 and up to 1990" adopted by the 26th CPSU Congress as the most important tasks of the forthcoming period outline greater balance and proportionality of economic growth, accelerated scientific and technical progress (STP) and stability of development of all sectors of social production.

The contemporary scale and structural complexity of the country's national economic complex, the close interconnection of its links and the high rates of social and scientific-technical progress pose especially sharply the two-fold demand that planning ensure constant balance and flexibility in developing the economy. On the one hand, the stability of socialist reproduction and the process of ensuring that its end results will meet social needs requires a relatively stable economic structure and dynamics. On the other hand, greater production efficiency and intensification and increasing demand for them necessitate constant innovation, rapid implementation of STP and changes in the composition of the end product. In so doing, they necessitate qualitative shifts in the reproduction structure.

Both aspects of this task are internally joined and mutually determinant, inasmuch as the major technical achievements and appearance of new types of production, the mastering and accelerated development of particular regions and the implementation of large-scale, long-term economic and social programs encompass not just one branch or region, but essentially the entire national economy and can be carried out successfully only given proportional economic growth and a normal flow of the reproduction process. Stress on unilaterality would lead either to inertia or to disproportions in economic development, and the "price" would now be extremely high and would in the end be expressed in reduced social production efficiency.

Consequently, the economic system must simultaneously be both stable and flexible. One of the most important means for meeting this demand is the comprehensive system of planned national economic reserves. Sufficient economic reserves ensure stability

*For discussion.

of economic development, uninterrupted enterprise operation and continuous improvement in the well-being of the people. In the CPSU Central Committee and USSR Council of Ministers decree of 12 July 1979, the formation of material and financial reserves necessary to the proportional, balanced development of the economy is cited as a basic direction in which to improve all planning work.

Various aspects of analyzing and forming reserves have been examined in the Soviet economic literature, especially in (1-4). This article is devoted to a theoretical analysis of this problem. We have formulated several initial positions.

The concept of reserves has multiple meanings. In the broadest sense, they are understood to mean any production and nonproduction possibilities which might be mobilized to ensure steady economic development, fulfillment and overfulfillment of plan assignments or planning maneuverability. At this level, we can delineate three important types: volume, structural and technological.

Volume reserves -- these are foremost stocks of resources. The mutual augmentation of resources used in production demands certain proportions in their production consumption for a prescribed technology. Output is limited by shortages of resources, so we need stocks, especially of types in short supply, for a given technology, both to "undo bottlenecks" in production and to provide for an assigned plan or to make a planning maneuver.

Structural reserves are associated with opportunities provided by the substitutability of resources in production and in final consumption. Thus, when a resource is in short supply, another one not in short supply can be substituted, which naturally leads to change in the production structure and in economic ties; in a number of instances, it also requires new technology.

Technological reserves lay in intensifying the use of resources, in lowering specific expenditures of them (technological coefficients) per unit of output.

In actuality, all three types of reserves are interlinked, and the initial reserves are generally volume ones. Substituting resources requires stocks both of the resource substitute which is in good supply and of all the resources interdependent with them. Intensifying production ordinarily entails renovation, mastering new equipment and technology, and no disruption of current production, which means ensuring the availability of volume reserves.

Reference is frequently made to reserves as hidden and as yet unused potential opportunities for economic development; their mobilization, be it by reducing losses, raising the shift index for equipment operation, improving production organization, stimulating production, and so forth, is said to be an extremely important planning task which relies on thorough technical-economic analysis of all aspects of social production, the latest achievements of science and engineering and leading experience. But we have proceeded from the assumption that all opportunities of this type, including structural and technological reserves to the extent that they are known, are already functioning in the plan and have already been taken into account in the planning structure and dynamics of the national economy. Consequently, the planning indicators for resources production and distribution by branch, association and enterprise also anticipate those reserves, resulting from the technology adopted and the production ties structure, including from normative interoperational and

construction stocks, time and size of deliveries, planned equipment maintenance and readjustment schedules, utilization of new capacities, and so forth. The normatives for these technological reserves need further improvement, but they have long been used in planning.

However, even such a plan might not be actually balanced and substantiated if it did not take into account indeterminacy factors influencing the implementation process. First, these factors cause deviation of particular actual indicators from what has been planned, and reserves which "fill in" the plan are needed to carry out the plan as a whole and the overall balance of economic development laid out in it. Second, there might be unanticipated changes in the structure of social needs and production opportunities which would turn out to be expedient, and reserves "supplementing" the plan are needed to ensure economic mobility. The above-described two-fold task is interpreted in this way in the problem of reserves.

Consequently, planning reserves are understood here to be a consciously planned complex of resources diverted from current production and nonproduction consumption and intended to compensate for indeterminant factors in the economic development process. Such reserves must not only guarantee plan fulfillment, but must also create conditions for planning maneuvers not anticipated, in principle, in drawing up the plan.

Our economy has evolved historically, over many years, to one which functions at a great strain. After the revolution and the civil war, we had to rebuild it as fast as possible and then to industrialize, provide a front during World War II, and after the end of the war, again rebuild and develop a national economy and force the attainment of quite a high level of production and consumption. Under such circumstances, it was impossible to seriously embark on a temporary diversion of any significant amount of resources from direct use, with the exclusion of special reserves. The demand for a taut plan was understood to mean the task of making maximum use of all available resources to produce output -- the greatest load on all capacities, on processing raw material, on enlisting labor resources. In each instance, total production potential was limited by a deficit of particular resources, which were concentrated in priority branches.

Under present conditions, the negative aspects of such an approach are being manifested increasingly sharply. The more developed economic ties are and the more frequent and more extensive structural shifts in the national economy are, the more any deficit in some kinds of resources or any shortage in blocs [of the economy] will generate a deficit in others and difficulties in supplying related links of the economy. In this regard, it is more difficult to exercise control over the assortment and quality of consumer output. In striving to resist this tendency, many enterprises have overstated applications for resources and have created hidden above-normative reserves, expanding the "self-supply" sphere and thus despecializing and increasing the costs of production.

Whereas today, with our enormous production apparatus and the enormous scope of involvement of resources in production, we are still encountering deficit phenomena, but they are caused in substantial measure by precisely such shortcomings in planned resources reserves. We therefore urgently need to change over to shaping a reserves system, and comprehensive reserves planning must become an integral part of the development and implementation of national economic plans at all levels of economic

management. Correspondingly, we need for the concept of a taut plan to include the formation of and increment in planned reserves in sufficient amounts and with a substantiated, internally consistent structure, which will permit realistic assurance of balance and mobility in developing the economy.

Indeterminancy Factors and Reserves

The starting point in analyzing the reserves problem is a description of indeterminancy factors. The strength of the plan lies in its ability not simply to guess at development, but to manage it; this ability increases with our awareness of influences on the planning target and, primarily, with expansion of the sphere of factors being controlled by the plan. "A realistic plan," the 15th Congress of the All-Russian Communist Party (Bol'shevik) pointed out back in 1927, "evolves inescapably and organically as a measure of actual growth in the organization of the national economy and as a measure of increasing opportunities for accurate recording and foresight on the basis of growing collectivization of the country's economy" ("KPSS v rezolyutsiyakh i resheniyakh s"yezdov, konferentsiy i plenumov TsK" [The CPSU in Central Committee Plenum, Conference and Congress Decisions and Resolutions], Vol 4, Moscow, Politizdat, 1970, p 32).

In the years since then, these objective and subjective prerequisites of national economic planning have been fully confirmed and actualized in socialist economic management. However, this in no way excludes indeterminancy factors. Since that time, the scope and complexity of the social production system have grown immeasurably, as have its ties with social and ecological processes, the STR [scientific and technical revolution] and international politics, and the consequences of planning decisions are more complex.

Indeterminancy is not identical to complete uncertainty, which would make planning senseless. As it is ordinarily understood in the theory of decisions, indeterminancy assumes that a planner is aware of numerous possible plan variants (alternative actions) and numerous possible outcomes (implementation consequences) for those variants, so he can evaluate expenses for each variant and ascribe an order of preference to those numerous outcomes. He does not know the probability that a given plan variant will lead to any particular outcome, that is, what its specific consequences will be. In partial indeterminancy (or "risk"), the distribution of outcome probabilities is thought to be known for each variant; in determinancy, each variant unambiguously leads to a known outcome, that is, to completely unambiguous consequences.

It is naturally simpler to work out a plan under determinancy conditions: if it is strictly balanced, it will be carried out without any deviations whatsoever and all the expected results will be obtained. But such a prerequisite is hardly realistic, even in operational planning, and becomes increasingly vulnerable as the planning horizon grows. In a first approximation, indeterminancy factors in planning can be broken down into two groups.

The first is formed by various kinds of partial indeterminancy factors which must be taken into account in current and (to some extent) medium-range planning. Among them, we would first of all cite random fluctuations in output release associated with weather, climate and other natural conditions (for example, along with high-yield years we also have droughts, floods, dust storms, rainstorms, earthquakes, and so on), as well as accidents. Also included here are irregular fluctuations in demand and

market conditions and, in a certain sense, deviations originating in planning oversights, failures to meet delivery schedules and assortment plans, failures to start up fixed assets promptly, on the one hand, and overfulfillment of initial plan assignments in individual production links, on the other.

In principle, the importance of this group of factors must decrease, relatively, in the future, as production opportunities are mobilized more fully in the plan, as balance work and economic discipline improve, as agriculture's dependence on the weather lessens, as worker skills and fixed assets quality improve, and so forth. All these deviations in plan actualization will require reserves which "fill in" the plan. Such fluctuations will probably be stochastic in nature, so their characteristics and distribution of outcome probabilities can be computed by mathematical-statistical methods using data for a number of years. Explicit or implicit evaluations of this type, which sometimes rely on the experience of the planners, are always used in developing plans, including in the determination of insurance reserves. The task of planning reserves with consideration of partial indeterminacy (1) and that of forecasting economic plan fulfillment (5) must be further developed in planning theory and practice.

But the main thing is not the random deviations described, and the thing which must be taken into account when planning economic and social development under indeterminacy conditions, especially for the medium-range and long-range perspective, is, of course, the need for thorough study of the initial status and the trends inherent in it, the more so, since both production and many social processes possess a definite accumulated "mass of inertia"; in particular, short-term fluctuations (as, for example, in harvests) can yield a cumulative medium-range deviation, and an accumulation of such deviations (as, for example, delays in building large projects) and be reflected far beyond one five-year plan. To be restricted to this means to reject fundamentally new, unanticipated alternatives, unforeseen but very important qualitative changes, structural shifts, bends in development trajectories.

Long-range planning deals foremost with unique, nonrepetitive processes which have no full analogs in the past by which the future can be judged. In this case, simple extrapolation of past trends and the probability evaluations obtained on their basis are far from adequate to make decisions. Consequently, factors in the second group are manifested here, that is, such factors as relate entirely to the above-cited characteristic of indeterminacy. They are first of all factors associated with STP. They are especially important in its initial stages, in fundamental and applied research, and are relatively less important in experimental design work and in activity on the production actualization of STP. Whereas previously the time frames of the initial stages of STP did not extend beyond the horizons of even long-range planning and did not demand especially large investments, the situation has now changed: the times involved are compressed, the investment requirements of STP have grown sharply and all the indeterminacy relating to it must be taken into account in the plans. Moreover, the potential spectrum of variants of possible future innovations has broadened substantially.

In some situations, the principle "growth points" and technological advances are already known (as, for example, nuclear power engineering and hydrogen fuel, laser technology, and so forth). But the tempo and scope of these advances, on which the directions of multibillion-ruble investments depends, are not clear: to what extent are they to be oriented towards developing today's old technologies and to what extent

towards reserves for rapid planning-production maneuvers to actualize alternative technologies? In other situations we do not yet know even the zones of future "growth points," but they, too, need economic assurance of scientific-technical progress.

The influence of these factors intensifies through continued production specialization and cooperation, through the increasing expansion and complexity of economic ties, inasmuch as the ever-increasing number of "updating centers" encompass entire groups of related branches. The deepening international division of labor exerts a largely similar influence. All these indeterminacy factors can only hypothetically be considered technical-economic factors. In actuality, they depend on the development of socioeconomic processes which contribute their own indeterminacy elements to the overall picture of the future.

The effect of socioeconomic indeterminacy factors results first of all from unanticipated change in social requirements and, correspondingly, in concrete goals and the structure of national economic end results in the long-range planning perspective. As the well-being of the population increases, there are serious shifts in the system of values and priorities of members of society, shifts which influence the overall structure of consumption and of our way of life as a whole. They also affect the labor activeness of the population, choice of occupation, skill improvement, migration and other demographic processes. Socialist society can influence these processes significantly, but it cannot fully predetermine them in advance. A certain amount of indeterminacy should also be taken into account when concretizing plan goals in connection with the developing international situation. Finally, it is hard to predetermine possible ecological consequences of particular planning decisions and their social effects.

All these factors in turn influence the choice of STP directions, the structure and dynamics of the economy and international scientific, technical and economic cooperation.

As distinct from the first group of indeterminacy factors, the influence of the second has intensified in the historical perspective, inasmuch as the rates and complexity of scientific-technical and social progress are growing. Moreover, the influence of factors in the second group will be increasingly strong both within the framework of the long-term planning horizon and within the medium-term planning horizon, so the economy will have to be adequately flexible and have "supplemental" reserves. These factors generate so broad and diverse a spectrum of possible decision variants and consequences that it is by no means easy to reveal and choose in advance the initial set of variants, much less to evaluate expenditures and results and assign preferences. Here, trend analysis is supplemented by various expert appraisals, international correlations, scenarios, simulation modeling and other long-range forecasting methods (6-8).

How complex long-range forecast planning is can be judged by comparing it retrospectively with corresponding actual indicators. Typically, the trajectory initially assumed in some plan variants is relatively close to the actual one, inasmuch as planners were able to take actual development conditions into account better; then it deviates more or less sharply from the actual dynamics: down if undue importance has been attached to previous development trends, up if there was an effort to reach desired levels by assuming insufficiently well-substantiated qualitative advances in production efficiency.

Be that as it may, the need for scientifically substantiated long-range forecasts is extraordinarily great. The comprehensive 20-year program of scientific and technical progress (reworked every five years) is called upon to provide corresponding material and reference points for long-range planning, including reserves planning.

So the conclusion follows that we need the planned formation of a comprehensive system of reserves which includes all types of national economic resources and is capable of effectively compensating for indeterminacy factors in the economy. At the same time, this apparently obvious conclusion is far from unambiguous. In fact, the transfer of any resource to reserve status takes it out of the sphere of production and nonproduction consumption. The entirely natural question of the appropriateness of creating reserves of particular resources for certain requirements which are as yet unknown in terms of either amount or time of appearance, when use of that resource in a given year could yield a tangible increment in output, unavoidably arises as well. This is a real conflict in the reserves problem, and it must be resolved in national economic planning theory and practice, of which reserves planning is an important section to be developed.

Questions of Reserves Planning

The isolated accumulation of raw and other materials in warehouses, idle capacities, manpower surpluses at individual enterprises and increasing unfinished construction cannot in and of themselves be interpreted as in any way being national economic reserves. Given the planned distribution of resources, such incomplete stocks not interfacing with the overall structure and dynamics of production consumption flows are dead weight which worsens the results of economic activity.

The creation of truly national economic reserves capable of successfully performing their functions in a socialist economy requires a unified planning approach. Only in the course of developing and recording the actualization of national economic plans can a system of planned reserves be defined: composition and volumes relating to the planned structure and dynamics of the economy as a whole.

For the external linking of reserves to the structure of intrabranh and interbranch flows, as well as to end consumption (consumer demand, social funds), we need to anticipate potential "nodes" of imbalance and "growth points" of the economy.

Revealing such "nodes" and bottlenecks will first of all permit determining links in which to concentrate particular reserves which "fill in" a plan. We can make successful use here of interbranch models (9), especially of interbranch interactions (10) in the same measure as the data base of statistics and expert appraisals is reliable.

It is considerably harder, as has been indicated, to establish the "growth points" on which the scope and structure of reserves "supplementing" a plan depend. In turn, these points also determine shifts in potential imbalance "nodes" in a changing economic structure, so that both aspects of the external linking of reserves are closely interrelated.

The internal correlation of the structure and dynamics of the reserves system in the national economy is no less complex. Here, we need to consider the mutually supplementing (complementing) nature, interchangeability and return lags of resources being put into reserves; otherwise, one cannot speak of reserves planning being systematic. In principle, all three of the indicated properties of the reserves system are

mutually dependent and determined by production technology and type of consumption, and they are all nonspecific for resources being put into reserves, as distinct from resources being used. They are therefore important both for the external and for the internal linking of the reserves system. However, the second instance has several peculiarities.

The mutually supplementing nature of reserves must ensure an internal consistency to their structure. We will not succeed in actualizing scientific-planning stocks in production without allocated experimental capacities. We cannot call reserve capacities into play if there are no reserves of raw and other materials, energy or manpower. But reserve capacities can operate using old technology and material and labor reserves can become necessary to operate existing capacities at full load. Consequently, the mutually supplementing nature of reserves cannot be viewed in isolation from the overall balance of the economy. At the same time, each "output" of reserves into the functioning economy must be ensured by complementary reserves related on the basis of technological ties. Whereas an economic "output" (meaning end product) is known in advance, the "outputs" of the reserves system into the economy are not predetermined. Reserves can be required at any moment and in any link of the national economic complex, at any stage of the intermediate consumption of resources. Just anticipating "nodes" of imbalance and "growth points" of the economy provides a certain point of reference for planning the internal reserves structure. In this regard, recording resource interchangeability enables us in some measure to avoid bottlenecks in production-technological ties and to reduce the volumes of types of resources in critically short supply which are being put into reserves. We also need to calculate correctly the impact of compensating for "quality" resources by using "ordinary" ones and the impact of substituting the latter for the former, orienting ourselves towards the priorities of consumer branches (11), towards the relationship of opportunities for and the effectiveness of putting into reserves resources of each type and of differing quality.

Finally, depending on the lags in obtaining a return on resources in production, reserves are distributed and linked using time horizons in plans. This dynamic correlation of the reserves system is closely associated with solving the problems described above. In fact, end product reserves can immediately go to meet social needs more fully, but each type is directed comparatively rigidly towards a definite object of need. The more resources consumption lags behind final "output," the greater the variance in its use generally is. A bus is intended to carry passengers, but sheet steel can be used to produce buses or for other purposes. Opportunities for the planned maneuvering of fuel, electricity and certain types of primary raw material are even greater. But the lag in obtaining national economic end results also increases correspondingly. The same can also be said of construction and production capacities in individual branches where their degree of specialization also has an effect.

In the course of internally and externally correlating the reserves system, that system can be comprehensively planned and fitted into the overall structure of the national economy. Substantiated calculation of planned normatives and volumes of specific types of reserves and their distribution by link of the economic structure demand a well thought-out, comprehensive evaluation of the national economic effectiveness of the planned reserves. This is perhaps the most complex problem.

First, reserves divert a portion of resources from direct production and nonproduction consumption. Consequently, when evaluating the "full expenditures" of the

reserves system, we need to take into account not just the direct and related expenditures on their formation, maintenance and increment, but also the national economic impact not fully obtained in the planning period from use of the resources being put into reserves in production and final consumption.

Second, the national economic results of the reserves system itself are expressed in the degree of reliability and flexibility of the economy, which can be measured and quantitatively evaluated only with difficulty.

Third, it is all the harder to obtain an overall estimate of the effectiveness of the reserves system in the form of a comparison of full expenditures and results. It obviously reduces to the amount of damage due to imbalance and delayed response in the economy to changing conditions (actualizing STP), shifts in social requirements, covering full national economic outlays on putting resources into reserves, which is prevented. The same idea was expressed in (1) with regard to "fill-in" reserves which ensure dependability, with the proposal of normative levels of reliability (that is absence of disruptions). Work (4) introduces the type indicator $(K_T - K_0)/E_n C$, where K_T is end product (or aggregate product or national income) obtained given the use of reserve stocks over their full circulation, from moment of creation to moment of use; K_0 is the same, excluding reserve stocks; C is expenditures on their creation and retention; E_n is the normative of economic effectiveness of national economic expenditures. However, it seems to us at the very least problematical to calculate values K_T and K_0 , as does the use of other indicators of comparative effectiveness for evaluating reserves.

The choice of a policy of putting resources into reserves also depends substantially on the solution to methodological problems of measuring reserves effectiveness. The formation of and increment in reserves occur through the accumulation fund. Increasing the share of reserves without a corresponding increase in this fund can initially lead to a reduction in rates of economic growth (although they will subsequently stabilize and then grow due to the greater balance and flexibility of the national economic structure), but an overall increase in the accumulation fund will cause a reduction in the growth rates of final consumption (although it will subsequently be covered by those same effects of putting resources into reserves). Choice of the specific relationships of the proportion of reserves in accumulation and the proportion of accumulation in national income is a most complex economic planning task which predetermines the place and role of the planned reserves system in the national economy.

Composition and Formation of Planned Reserves

The forms in which reserves are created depend on the type of corresponding resources, their degree of mobility and opportunities for mobilizing them and using them in production and consumption. Inasmuch as reserves are one of the function directions in which resource potential is used, the list of such reserves basically coincides with the classes of national economic resources*. However, the specific composition,

* Some types of resources cannot be put into reserves. This relates to ones which have only a flow dimension, not a reserves dimension; for example, we cannot set aside services proper (as distinct from finished products), but we can set aside capacities for producing services. We cannot accumulate reserves of electricity, but we can create reserve generating capacity. We cannot set aside certain types of information (especially quickly obsolete) or perishables.

creation and use of particular types of reserves must be planned in various ways within the framework on short-term (ST), medium-term (MT) and long-term (LT) plans. On the one hand, each has available to it a specific set of basic control factors: for ST -- maneuvering current materials and foreign-exchange resources, and labor resources to some extent; for MT -- maneuvering capital resources, planning migration processes and training personnel, setting prices, economic norms and values for other parameters of the economic mechanism; for LT -- strategic planning of STP and investment policy, improving the structure of the economic mechanism. On the other hand, indeterminacy factors, as has been shown, are also manifested in various ways within the framework of ST, MT and LT planning horizons, and they have an especially sharp effect when directed at these very control factors of a given plan.

Let's move on to describing individual types of planned reserves.

Natural resources reserves are formed in corresponding resource classes -- land, timber, water and mineral deposits. Their inclusion in ST, MT and LT reserves depends on the degree to which particular types are being utilized within specific territories, including infrastructural availability (of transport, amenities for workers, and so forth). For example, ST reserves might include stocks of category A minerals, MT reserves -- A and B, and LT -- C₁ and C₂. In precisely the same way, only a small portion of the unused land or timber is part of the ST reserve. The MT reserve might include, let's say, timber adjacent to the BAM construction site, and LT reserves might include timber in a broader zone of BAM economic utilization.

Natural resources are a most important initial type of reserves, one on which the effectiveness of the entire system depends at the moment an economic situation requiring their "output" into the national economy arises. Our country has sufficient amounts of practically the whole gamut of natural resources, permitting us to shape an integral system of such reserves.

Questions of creating a natural resources reserve can be decided differently for different types of resources. As applicable to so-called nonrenewable resources, which include minerals, the primary way of forming reserves is by having geological surveying work outstrip use and by increasing known reserves as compared with extraction increment. This is already a most important plan requirement. The creation of reserves to compensate for the indeterminacy factor requires the establishment of planned quantitative relationships between reserves increment and extraction.

A different approach should be taken in shaping the reserve of renewable natural resources. For timber, the primary thing is to plan outstripping timber surveying work. For land, it is outstripping reclamation work, steps to restore the ground cover and use worked-out quarries, and so forth. For water resources, it is preventing pollution, water treatment, and so on.

Reserves of material values in the production and circulation sphere form the next large group. This is currently the most widespread type of reserve. Its proportion in circulating capital is high. The circulating capital reserves structure provides a considerably broad, but not complete, idea of both the composition and the nature of reserves needed to compensate for indeterminacy. This structure differs for each branch of the national economy according to production specifics (see Table, following page). Seed, fodder and livestock naturally occupy the highest proportion in agricultural reserves. In construction, with its long production cycle, the leader is

Structure of Circulating Capital in Commodity-Material Value Reserves, in percent of year's end total							
indicator	national economy		industry		agriculture (sovkhozes and other state farms)		trade
	1965	1979	1965	1979	1965	1979	1965 1979
production reserves,	40.8	39.4	58.5	59.2	79.9	81.5	89.3 27.7 6.6 7.4
including raw and other materials and purchased semifinished products	23.5	22.3	43.4	43.2	5.0	8.0	75.3 24.0 2.5 2.8
fuel	1.0	0.7	1.4	1.4	1.7	1.2	-- -- -- --
packaging	2.1	1.7	2.4	2.3	1.1	1.5	-- -- 2.3 2.7
spare parts	2.1	2.1	3.2	4.2	4.5	3.0	-- -- -- --
tools and inventory	5.7	4.9	8.1	8.1	3.8	3.3	13.6 3.7 1.8 1.9
seed	1.0	0.0	--	--	10.1	7.7	-- -- -- --
feed and forage	1.2	1.5	--	--	12.9	13.5	-- -- -- --
livestock for fattening and young stock	3.7	4.9	--	--	40.5	43.1	-- -- -- --
unfinished production and own semifinished products	10.4	22.2	20.0	22.0	17.0	15.6	8.3 72.1 0.1 0.3
finished products	6.0	4.2	13.7	11.5	2.7	2.0	-- -- -- --
goods	40.2	32.1	2.7	2.7	--	--	-- -- 92.7 91.7
others	2.6	2.1	5.1	4.6	0.4	0.9	2.4 0.2 0.6 0.6

(Note: data from (12), p 544)

unfinished construction, and in trade -- goods. Attention is also called to the definite stability (with certain exceptions) of the structure of reserves over time, changes being a result of fundamental technical advances in a branch. Thus, increasing the degree of prefabrication in construction, building projects out of prefabricated parts "assembly-line style," has enabled us to sharply reduce the proportion of production reserves, but has increased the proportion of unfinished construction.

In principle, normative circulating capital reserves are not intended to compensate for indeterminacy factors. They must take into account as fully as possible the production and delivery conditions invested in the plan and ensure the planned flow of the social production process. But in reality, they also include in a concealed form (the more so for above-normative reserves) a portion of reserves for compensating for indeterminacy factors. Inasmuch as such reserves are not anticipated by the plan, many enterprises overstate normatives for production expenditures, application calculations of repair-operating expenditures, and so forth. In these instances, reserves take the form of current resource requirements. Enterprises often take such supplemental, incomplete reserves for reciprocal "exchange in kind" for resources they need. Such procedures essentially signify a spontaneous formation and redistribution of materials resources. However, in a planned economy we require a different mechanism for their formation and use.

As distinct from normative circulating capital reserves, [true] reserves not only do not depend on planned conditions of economic functioning, but the reverse is true; the necessity of forming them arises from the supposition that these conditions may not be met. Whereas circulating capital reserves are in constant motion, being removed from storage facilities to meet production needs and then replaced, a reserve to compensate for indeterminacy factors must be inviolable until an unplanned situation arises, for which reason it might not be called into play for a very long period of time.

In our opinion, reserves of materials in the form of warehoused stocks of fuel, raw material, semifinished products, and so on, to compensate for the indeterminacy factor should be formed only within the ST planning framework and only for one-time consumption. As concerns MT and LT planning or the necessity of using a reserve continuously, a reserve to cover demands for circulating capital when an unplanned situation arises could be formed not as stocks of fuel, raw and other materials and semifinished products in warehouses, but in the form of reserve capacities to produce them.

Let me explain using an example. Say that, as a result of major natural calamities, we need to immediately carry out a certain amount of construction-installation work which requires cement. In this case, we must anticipate a reserve in the short-term plan in the form of actual stores of cement. The situation is such that one cannot wait while the whole chain is set in motion -- extracting raw material and then producing the cement. After that reserve is exhausted, it must be rebuilt; to do this, reserve cement industry capacities are brought into play. They replace the cement used and are again placed in reserve. Reserve capacities could also be activated when the demand for one-time cement use exceeds the reserve itself. But this does not change the essence of the matter, since after a certain amount of cement has been produced, these capacities are again placed in reserve.

Let's now examine another case. A new method of installing some project has been invented wherein a number of components previously manufactured only out of metal have

now been replaced by concrete components. This increases the demand for cement and decreases the demand for metal as against the designs of the five-year plan. The indicated invention is considered to be very effective and a decision is made to reorient ourselves towards making all these components out of concrete. We then must continuously activate reserve cement production capacities throughout the entire chain, from raw material to finished product. The "output" of this reserve into the national economy also requires that it be rebuilt. The condition that the reserves system be coordinated signifies in our example that there must also be reserves of those resources needed for the immediate construction of new cement industry capacities to replace those which have "left" the reserve. Of course, in this case the national economy will be left without reserve capacities (or with a lesser reserve, if fewer capacities than were available in reserve have been activated as a result of the unplanned situation which has arisen) for a time equal to the normative construction period. However, as has been said, a capacities reserve is a MT or LT reserve, that is, periods in which the normative construction periods now in effect are wholly included.

All this also applies in equal measure to reserves of semifinished products, equipment and, to a certain extent, reserves of consumer goods. Here, too, we need stocks of output for ST and emergency one-time use, and we need production capacity reserves for the long-range plan and for continuous use.

So, the primary reserve of material values must be a production capacities reserve. It is precisely here that the fundamental difference between the system of reserves to compensate for indeterminacy factors and the current system of circulating capital reserves is manifested.

Some enterprises which have adapted to indeterminacy factors in their own development are already covertly trying to create reserve capacities, not to mention above-normative (in terms of schedules) uninstalled equipment and the use of production capacities substantially below instruction specifications. Of course, this is primarily to be explained by shortcomings in organizing the operation of such enterprises, but in part, there is a hidden production capacities reserve here to deal with unplanned situations.

With the exception of certain obviously special needs, until recently practically no one has posed the question of creating production capacity reserves. The economics literature refers often and in great detail to opportunities for loading existing capacities more fully, to output shortfalls due to low use coefficients. The methods and instructions currently in effect are aimed at raising this coefficient in the plan. In our opinion, given the great importance of orienting collectives and enterprise leaders towards a maximum load on the available production apparatus, the task of forming a coordinated system of production capacity reserves is no less important. These reserves are needed to ensure conditions for scientific labor organization, experimental work, introducing scientific and technological achievements and, foremost of course, to compensate for indeterminacy factors.

At the same time, as applicable to production capacities, the above-noted contradictory nature of the reserves problem is most clearly evident, in that considerable material resources would thus not be used in current production, while the demand for them in the national economy is substantial. In fact, ensuring stable, high rates of development of the Soviet economy at the present stage requires large

capital investments to create new production capacities. Nonetheless, the necessity of forming production capacity reserves flows naturally from the task of ensuring guaranteed, systematic, balanced economic development. The creation of reserve capacities encounters one other difficulty which is practically nonexistent with regard to objects of labor. It is impermissible for new capacities to stand unused, in reserve, until they become obsolescent.

We see the selection of a correct, intelligent form of creating production capacity reserves as the way out of these conflicts. The starting point here must be the establishment of a precise difference between inactive capacities and capacities not producing output. Their use is expressed by no means only in that they are producing output, as a given capacity can be running an experiment, testing new technical resolutions, modernizing or replacing equipment. All this is completely necessary, along with producing output, and in forms and stages in the operation of production capacities. It is precisely the absence of reserve capacities that is in considerable measure a brake on the prompt retooling of production.

The 26th CPSU Congress set the task of outstripping rates of renovation and retooling of functioning production, which attaches special significance to the problem of reserve capacities. These capacities are needed now, so as to constantly maintain the production apparatus at a modern technical level and in working condition. In this function, they perform the role of a kind of "circulating fund" of capacities which are being renovated and retooled and are then moved into the ranks of those producing output. Other, existing capacities which have either been used for testing new technical resolutions or modernized or retooled, are transferred to the reserve to replace them. It is precisely these capacities which can be activated when an unplanned situation arises which requires compensation for the indeterminacy factor.

Of course, one-time insertion of investment resources into the national economy is required to form such reserve capacities, and their immediate goal and direct result will not be to increase the volume of output produced. But in the final analysis, the presence of reserve capacities will yield a significant impact, including that in the form of saving capital investments. Broader opportunities will open up for more effective investments in retooling and renovating existing production without the necessity of compensating for this by introducing new capacities.

The creation of reserves of objects of labor and production capacities still does not ensure the overall completeness of the system of planned reserves or that it will carry out its functions. In order to bring materials reserves into play when a certain situation arises, we need labor resources. There thus arises the complex problem of labor reserves, and one which urgently needs resolution.

The formation of labor reserves in the ugly form of unemployment is obviously unthinkable for our society. This chronic sore of capitalism has been eliminated once and for all in our country, beginning in the 1930's, and has been a tremendous social gain of victorious socialism.

In the USSR economy, to the contrary, there is a labor resources deficit. This circumstance is beginning to emerge as an important factor determining the potential of the national economy and, in particular, of branches and regions with especially high labor deficits, in terms of utilizing capital investments and then using the newly created fixed assets. At the same time, one must not think that our economy has no

manpower reserves. We know, for example, that there is not a full load on labor resources in agriculture during the winter, while in the summer and fall, large numbers of workers from cities are enlisted in agricultural work, including those from industrial enterprises, which often operate quite normally during that period.

The apparent deficit in labor resources is to be explained, from our point of view, by two circumstances. First, manpower requests by branches of the national economy and industry already include, covertly, reserve requirements, which in this instance take the form of a part of current requirements. Second, we lack a sufficiently flexible system of interbranch and interregional labor resources redistribution. As a result, a real deficit is created in individual sectors and a hidden reserve is created in others. I should especially emphasize that the lack of a flexible system for redistributing labor resources is in no way connected with the idea that personnel stability has already been ensured at each enterprise. The striving by leaders of some enterprises to retain a hidden labor reserve (since there is no assurance that they would be able to recruit workers should the need arise) is opposed as well by the effort forced upon leaders of other enterprises to "entice" workers they need themselves. All this generates personnel turnover.

In our opinion, this process can be put into a strictly planned framework with the creation of conditions for the planned retraining and redistribution of personnel in accordance with the requirements of change in the structure of social production and the distribution of productive forces. To this end, we first of all need steps which encourage enterprise leaders to release workers, as for example, the right of enterprise leaders to raise the wages of their subordinates using a portion of the wage fund for workers thus released. In order for them to be able to find work in other branches and regions, we need a broad network of personnel retraining (with stipend payments) into which these workers would be transferred. Such transfer must not be viewed as a dismissal; released workers are sent for training directly to enterprises and then, after finishing their training, can go where there are actually not enough personnel. The retraining network could take on the organized redistribution of personnel among branches and regions in accordance with their applications and could also provide labor resources for all seasonal jobs, including those in agriculture. The contingent being retrained would also be a labor reserve which could be activated when necessary to compensate for the indeterminacy factor.

Such a system would, in our opinion, actually create conditions for continuously improving worker skills and, most importantly, their adaptation to the demands of technical progress and changes in the production structure. At the same time, workers would strive to improve their skills and work quality without a break from production.

Inasmuch as the flows of financial resources reflect and mediate material-substantive flows, proper shaping of material and labor reserves opens up opportunities for the substantiated planning of financial reserves. One of the primary problems in this area is the choice of a ratio of budget reserves and the financial reserves of ministries, departments, associations, enterprises to credit reserves, but it depends substantially on the overall structure of the economic mechanism. Foreign-exchange reserves play an especially important role, as they can in principle fill in for a lack of other types of natural-material resources or reserves, and of technical-technological information as well.

As distinct from the reserves previously described, scientific and design reserves are informational in nature. This means those scientific development or design resolution

variants which have for various reasons not been included directly in state plans for top-priority research and implementation of STP, but which are recognized as being sufficiently promising to warrant further work. The high degree of indeterminacy in the early stages of STP and the possibility that related conditions (new materials, types of fuel, technology, and so forth) will change make a certain parallelism in scientific research and planning-design development entirely justified, especially in the most important directions of STP.

Relating scientific-design reserves to ST, MT or LT planning depends on the STP stage in which they are being developed: for LT, it means primarily fundamental and applied research variants being developed, for MT -- technical resolutions and experimental design work, and for ST -- experimental production results. Of course, actualization of such reserves must be backed up by corresponding reserves of materials, equipment and labor resources (scientists, designers, workers).

Questions of Organizing the Planned Reserves System

We have examined features of organizing the main types of planned reserves, and it was revealed in each instance that potential opportunities for forming them are available in the national economy. At present, a significant proportion of the reserves are concealed in the stated current requirements of enterprises for natural, material and labor resources, in applications for equipment and capital investment, and so forth. This practice of putting resources into reserve in a decentralized, unplanned manner leads to a situation in which these odd, incomplete, relatively immobile hidden reserves are freezing enormous sums and lowering the overall effectiveness of the national economy.

Planned organization of the reserves system would hardly require diverting large amounts (as compared with the indicated reserves) of the main types of resources from current production and consumption. However, the effectiveness of such a system will be incomparably greater due to the completeness of the reserves and opportunities for mobilizing and maneuvering them. It must become one of the most important targets of centralized state planning, but that in no way signifies that all types of reserves should be established in full volume or distributed from a single center. In each instance, we need to compare the relative saving of funds achieved by centralizing reserves with the speed and flexibility with which reserves at the disposal of economic links can be maneuvered. Naturally, strategic reserves required to overcome possible major disproportions and, especially, for large-scale interbranch decisions, must be run by central economic planning agencies and tactical reserves to compensate for on-going fluctuations and to solve intrabrand problems could be transferred to ministries, departments and associations, given approved procedures for forming and using them. Such an approach concretizes the general principle of democratic centralism in socialist planning as applicable to reserves.

Consequently, centralized planning of the reserves system assumes: development of provisions on the system of planned reserves, methods instructions, indicators and procedures for drawing up a corresponding section in state plans; establishing volume indicators for centralized reserves and making decisions on their distribution in the course of plan implementation; determining plan normatives for putting resources into reserves and procedures for creating, storing and using reserves; calculating economic normatives on paying for resources put into reserve and covering outlays on their formation and storage (especially important for decentralized reserves); methods

supervision of reserves planning at all levels and in all links of national economic management, including the creation of methods principles for evaluating the effectiveness of reserves; monitoring plan fulfillment in terms of reserves and procedures for their use.

The provision of methods and development of a complex of planned reserves indicators will require taut work by a large collective of various kinds of specialists -- planners, economists and engineers -- and we can at this point express only a few preliminary ideas on this.

The starting point is obviously to delineate centralized and decentralized reserves, substantiate procedures for planning the indicators and plan normatives for putting resources into reserve by individual type and by branch of industry and the national economy. Corresponding reserves balances can be drawn up on the basis of these indicators and normatives and the resources being put into reserve can be calculated in materials, labor and financial balances, which must ensure internal agreement of the reserves system and its external correlation with national economic balances.

The next important stage will be the actual "placement" of reserved resources (by type) throughout the country at enterprises, in material and technical supply organizations, in trade, and so forth. Further, we will need to determine a procedure for making decentralized reserves available to and distributing them among the ministries, departments and subordinate associations and enterprises. Material-technical supply agencies will probably occupy a special place in this. Concentrating a portion of the materials reserves (including those transferred to other ministries and enterprises) in them will ensure more efficient storage and use of these reserves.

Creation of a well thought-out, smoothly operating system of reserves management at all levels is an inseparable part of improving the economic mechanism. The reference is not to forming additional new agencies. Reserves management is called upon to become one of the important, permanent functions of all existing management system links. The task is to link their decisions regarding reserves into a single functional subsystem of plan leadership: to determine and coordinate the rights, responsibility and supervision in the organizational structure of management, procedures for reporting, incentives, penalties, and so forth. Proper reserves planning and management is a necessary matter, but an expensive one, and only intelligent organization can ensure their effective use in the socialist economy.

BIBLIOGRAPHY

1. Vishnev, S. M., "Problems of An Optimum System of National Economic Reserves," *EKONOMIKA I MATEM. METODY*, Vol 2, No 3, 1966.
2. Kvasha, Ya. B., "Rezervnyye voschnosti" [Reserve Capacities], Moscow, Nauka Izd-vo, 1971.
3. Shermenev, M. K., "Finansovyye rezervy v rasshirennom vosproizvodstve" [Financial Reserves in Expanded Reproduction], Moscow, Finansy Izd-vo, 1973.

4. Polovinkin, P. D., "Rezervnyye fondy v sotsialisticheskoy vosproizvodstve (Voprosy teorii i metodologii)" [Reserve Funds In Socialist Production (Questions of Theory and Methodology)], Moscow, Ekonomika Izd-vo, 1979.
5. "Ekonometryczne metody prognozowania wykonania planow gospodarczych," Warszawa 1979.
6. Yanch, E., "Prognozirovaniye nauchno-tekhnicheskogo progressa" [Forecasting Scientific and Technical Progress], Moscow, Progress Izd-vo, 1974.
7. Vishnev, S. M., "Osnovy kompleksnogo prognozirovaniya" [Principles of Comprehensive Forecasting], Moscow, Nauka Izd-vo, 1977.
8. Anchishkin, A. I., "Prognozirovaniye rosta sotsialisticheskoy ekonomiki" [Forecasting Socialist Economic Growth], Moscow, Ekonomika Izd-vo, 1973.
9. Kossov, V. V., "Mezhotraslevyye modeli" [Interbranch Models], Moscow, Ekonomika Izd-vo, 1973.
10. Yaremenko, Yu. V., Yershov, E. B., and Smyshlyayev, A. S., "Model of Interbranch Interaction," EKONOMIKA I MATEM. METODY, Vol 15, No 3, 1979.
11. Yaremenko, Yu. V., "Methodological Principles of Analyzing the Structure of the Economy," EKONOMIKA I MATEM. METODY, Vol 15, No 3, 1979.
12. "Narodnoye khozyaystvo SSSR v 1979 g. Stat. yezhegodnik" [USSR National Economy in 1979. Statistical Annual], Moscow, Statistika Izd-vo, 1980.

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PLANNING AND PLAN IMPLEMENTATION

NEW STATUTE ON COUNTER PLANNING IN 11TH FIVE YEAR PLAN

Moscow EKONOMICHESKAYA GAZETA in Russian No 25, Jun 81 p 6

[Article: "Statute on the Procedure for Developing Counter Plans for the 11th Five Year Plan and for Stimulating Plan Implementation"]

[Text] This statute was ratified by the USSR GOSPLAN, USSR Labor Committee, USSR Ministry of Finance, USSR Central Statistical Administration, and All-Union Central Trade Union Council on 25 May 1981.]

In the review report of the CPSU Central Committee (CC) to the XXVI Party Congress, General Secretary of the CPSU CC, comrade L.I. Brezhnev, noted: "Socialist competition is the creative work of the masses. By its very essence, it is founded upon a high level of consciousness and initiative on the part of the people. It is this initiative which aids in identifying and implementing production reserves, and in improving the efficiency and quality of work". He emphasized here that the primary role in socialist competition falls to counter plans and similar initiatives through channels "bottom to the top", i.e., from the laborer, the brigade, the enterprise, and the industry.

In "Primary Directions for the Development of Economic and Cultural Areas in the USSR for 1981-1985 and the Period to 1990" the task was levied to develop and implement counter plans. Fulfillment of this task requires intensified organizational work in the enterprises, and increased roles for ministries, departments, union republic Councils of Ministers, Soviets of People's Deputies executive committees, and trade union committees and councils in establishing the necessary conditions for successful development and realization of counter plans.

Counter plans for the 11th Five Year Plan are to be developed in accordance with Statute of the CPSU CC and USSR Council of Ministers of 12 July 1979, No. 695, "On Improving Planning and Intensifying the Effect of the Management Mechanism in Improving Efficiency of Production and Quality of Work", and the Statute of the CPSU CC, USSR Council of Ministers, the VTsSPS, and VLKSM (Komsomol) Central Committee of 26 March 1981, No. 304 "On All-Union Socialist Competition in the Successful Fulfillment and Over-Fulfillment of 11th Five Year Plan Tasks".

The USSR GOSPLAN, the State Committee for Labor and Social Problems, the USSR Ministry of Finance, the USSR Central Statistical Administration (CSA), and the VTsSPS establish the following procedure for developing counter plans and for stimulating the fulfillment of those plans.

1. Counter plans are developed by labor collectives of production associations (enterprises) and organizations based upon the extension of socialist competition and use of intra-organizational reserves and plans ratified by higher-echelon organizations, plans which exceed the tasks of the five year plan as established for the appropriate year.

Labor collectives of production associations (enterprises) and organizations may develop also counter plans for the 11th Five Year Plan overall (with breakdown of tasks by year) which at a future date would be amended during the compilation of yearly plans.

2. Counter plans must be directed toward improvement of qualitative indicators, and primarily toward improving labor productivity, raw-materials economy, savings of materials and fuel-energy resources, cost reduction, increased profits, output of products in the highest quality categories, more efficient use of production capacities, increased volumes of output chiefly through the savings of resources, and also toward the overfulfillment of social development indicators for production associations (enterprises) and organizations.

Counter plans of production associations (enterprises) and organizations must also provide for the resolution of tasks levied upon individual sectors of industry and the national economy in "Primary Directions for the Development of Economic and Cultural Areas in the USSR for 1981-1985 and the Period to 1990", including:

in heavy industry sectors, for the increased extraction of oil and coal, the comprehensive development of the gas and chemical industries, a substantial improvement in the quality and expanded product range of metal products with further increases in the production of metals;

in machine building and metal working--increased output of new progressive types of machinery and equipment, savings in ferrous and non-ferrous metals and all types of raw materials, improved use of production capacities and improved shift operation of equipment;

in industries producing consumer goods, a comprehensive increase in the output of these goods, an expanded product range and improved quality, provision for the economical and efficient use of raw materials and other materials, and a substantial increase in the production of consumer goods in public demand and satisfying modern fashion requirements;

in sectors processing agricultural raw materials--provision for total and comprehensive processing of raw materials in short time frames, reduction of losses and waste in all production stages, increased product quality, and maximum use of production capacities;

in construction--timely and ahead-of-plan introduction into operation of capacities and sites, reduced volumes of incomplete construction, accelerated renovation and re-equipping of existing enterprises, and improved quality of production;

in transportation--satisfaction of national economic requirements in transportation, to include public demands, the effective use of transportation resources, and improved quality of service rendered.

3. The development of counter plans in production associations (enterprises) and organizations must be preceded by thorough preparation, during the course of which collectives of the production associations (enterprises) and organizations develop programs for economic expenditure of raw materials and other materials, for optimum use of the labor force founded upon multiple professionalism (being qualified in more than one occupation), widespread development of the brigade form of organization, stimulation-incentive programs for labor and also the introduction of scientifically founded technico-economic norms and normatives for labor and the reduction of losses in production.

Preparatory work for the compilation of counter plans in production associations (enterprises) and organizations is headed by their managers, party, labor union, and Komsomol organizations. Managers of production sub-elements, economic, technical, and other services of production associations (enterprises), organizations, and production leaders are also enlisted in the preparation stage.

Drafts of counter plans for production associations (enterprises) and organizations are formulated on the basis of individual worker plans, counter plans and obligations, adopted by collectives of brigades, sections, shops and other production elements. After discussion and ratification, the drafts of the counter plans are directed up through channels as part of the draft-plans for the economic and social development of the production associations (enterprises) to the appropriate higher echelon management and labor union organizations.

4. The process of examining the proposals indicated:

verifies the effectiveness of the counter plan drafts introduced and their agreement with public and national economic requirements;

coordination of counter plan drafts is accomplished with the draft-plans of enterprises-sub contractors;

programs are implemented to provide counter plan drafts with material resources in addition to tasks relating to their savings.

Counter plans adopted at the initiative of production associations (enterprises) and organizations which exceed the tasks of the five year plan, established for the appropriate year and coordinated with material resources, are included in the annual plan. Here the amount of the increase for the counter plan indicator above the tasks of the five year plan for the appropriate year is indicated by a specific line.

USSR Ministries and departments, union republic Councils of Ministers, and Peoples Deputies Council executive committees support in every way the initiative of labor collectives in the development of counter plans, and create the necessary material, organizational-technical and economic conditions for the successful realization of counter plans, and systematically effect a monitoring process over the implementation and fulfillment of those plans.

5. In ratifying counter plans for 1981-1985 for production associations (enterprises) and organizations, a simultaneous increase in plan funds for material incentives and funds for social-cultural programs and housing construction is made by and within the limits of additional profit above the appropriate year as indicated in the five year plan as that envisaged in the counter plan.

The increase indicated in plan figures for material incentive funds for industrial associations (enterprises) and organizations, adopted in the counter plans, is accounted for in the plan in incentive resources of the ministries (departments), overall, and also in annual financial plans of the ministries (departments). In the event the production associations (enterprises) adopting the counter plans fail to achieve an additional profit above that of the five year plan for the appropriate year, the increase in plan provision for incentive funds may be effected through reserves (centralized resources) of higher echelon organizations.

An increase in material incentives funds is accomplished with each point (percent) increase of the five year plan task for growth in labor productivity (in specific industries also for growth or increase in production) for normatives undergoing a threefold increase and normatives established for output-capital ratio levels, profitability, and other qualitative indicators (with the exception of the normative for the proportion of high-quality production to the total production volume) when they increase by a factor of 1.5.

When the tasks for increasing the proportion of production in the highest quality category to total production volume in the annual plan exceed those of the five year plan, the fund for material incentives is increased for each point (percent) of the indicated increase for the normative, equal to 3 percent of the material incentive fund for the appropriate year of the five year plan.

Additionally, for the increases of profit relative to the tasks of the five year plan, the plan fund for material incentives is increased additionally by 2 percent for each point (percent) of increase over the tasks of the five year plan.

An increase in social-cultural program and housing construction resources occurs according to the established normative (in percentage of the material incentive fund).

For industrial (production) associations substantially increasing output of high-efficiency production for industrial-technical purposes and new consumer goods, increased normatives are established. Specific ranges (scales) for the increasing of normatives are established by a higher echelon organization in coordination with the appropriate labor union organization.

Consumer goods produced through increased counter plans over and above the five year plan remain at the disposition of the union republic Councils of Ministers in accordance with the territorial disposition (locations) of those enterprises adopting these counter plans. The union republic Councils of Ministers may transfer up to 50 percent of the indicated increase for sale to the populace through the retail trade network to the Councils of Ministers of the autonomous republics and executive committees of the kray, oblast, and okrug Peoples Deputies Councils.

For those production associations (enterprises) and organizations having established counter plans for increasing the proportion of high quality production to overall production volume, labor productivity, and other indicators with no corresponding additional growth in profit, increases in the incentive fund may be accomplished through reserves (centralized funds) of higher echelon organizations.

6. Industrial (production) associations (enterprises) and organizations adopting socialist obligations to overfulfill fund-forming indicators of the ratified plan for the appropriate year of the five year plan, in the fulfillment of the indicated socialist obligations, deduct from the incentive fund according to established norms, without their reduction.

With overfulfillment of counter plans and socialist obligations, additional deductions are made from the incentive fund for the indicated overfulfillment by a general schedule, i.e., according to established norms, reduced by not more than 30 percent.

With underfulfillment of counter plans for fund-forming indicators or profit, plan incentive funds are reduced for underfulfillment in areas adopted according to the counter plan above the tasks of the five year plan according to norms provided by Point 5, of the current statute, and for profits--by 2 percent for each point (percent) of underfulfillment, and in the area of tasks of the five year plan, in the usual procedure.

7. Premiums for workers in production associations (enterprises) and organizations adopting and fulfilling counter plans are established and paid at increased scales. Here, the scale for increased premiums for management personnel is determined by the manager of the higher echelon organization.

In the event of underfulfillment of the counter plan, but fulfillment of the five year plan for the appropriate year, the increased part of the premium is paid to workers proportionally, relative to the fulfillment of the counter plan.

8. Production associations (enterprises) and industrial organizations adopting counter plans record this on form 1-VP. Plan indicators for production associations (enterprises) and organizations adopting counter plans must be recorded statistically on forms 1-P, 2T and others within the scope of the counter plans ratified by the upper echelon organizations.

Ministries, departments, and statistical organizations locally monitor the timeliness and correctness of record keeping by production associations (enterprises) and organizations regarding counter plans.

9. In the event that particular production associations (enterprises) over the course of a year exhibit a drop in plan indicators greater than the increase over the five year plan earmarked in the counter plan by the separate line, they do apply to the associations (enterprises) and organizations having counter plans for that particular indicator.

10. Production associations (enterprises) and organizations adopting and fulfilling counter plans, including indicators for social development, have an advantageous right to the awarding of prizes and banners according to the results of socialist competitions.

INVESTMENT, PRICES, BUDGET AND FINANCE

STATISTICAL ANALYSIS OF INDUSTRIAL FIXED CAPITAL EXPLAINED

Moscow VESTNIK STATISTIKI in Russian No 7, Jul 81 pp 16-24

[Article by V. Andreyeva: "Statistical Analysis of Fixed Productive Capital in Industry"]

[Text] The problem of increasing the effectiveness of social production plays an exceptionally important role in the further development of the nation's economy in the present stage of communist construction. The solution of this problem depends on many factors. Among them, a very important place belongs to the rational use of fixed productive capital.

Fixed productive capital is of decisive importance in the nation's economy. This capital is a substantial part of society's wealth and its proper utilization is the principal condition to increase the labor productivity of every worker.

The "Basic Directions of Economic and Social Development of the USSR in 1981-1985 and the Period Up to 1990" state: "Implement measures to increase the output-capital ratio in branches of the national economy, in associations, at enterprises.

Use production capacities more rationally, introduce highly productive technology more widely, improve the structure and update existing fixed capital in good time.

Devote particular attention to shortening the time required to reach rated capacity and to attain other technico-economic indicators of enterprises and facilities that are put into operation; increase the number of shifts the most effective machines and mechanisms are in operation; replace obsolete equipment more promptly."^{*}

The growing scale of industrial output and technical production potential predetermines the need to strengthen the economic analysis of the effectiveness of social production in one of its principal directions--the effectiveness of the utilization of fixed capital.

State statistical agencies have made a major effort to improve the statistics of fixed capital and production capacities. At the present time, the statistical

^{*}"Materialy XXVI s'yezda KPSS" [Materials of the 26th CPSU Congress]. Moscow, Politizdat, 1981, p 141.

study and economic analysis of fixed capital in industry are conducted in the following basic directions: availability, movement, renovation and composition of fixed capital; utilization of fixed capital.

In general form, the volume of fixed capital and changes in fixed capital is characterized in the fixed capital balance which is compiled each year on the basis of full value and value less depreciation (amortization). Data on the availability and movement of fixed capital are contained in the industrial enterprise's annual "Report on the Availability and Movement of Fixed Capital and the Amortization Fund" (Form No 11).

Data on the availability and movement of fixed capital based on full balance sheet value are the foundation for annually developed indicators characterizing the availability of fixed capital and its movement (activation of new fixed capital, liquidation of fixed capital); the growth and renovation of fixed capital; the composition (structure) of fixed capital broken down into buildings, structures, major types of machinery and equipment, conveyors, means of transport, etc., as well as amortization allowances, and expenditures on the capital repair of fixed capital.

These indicators are elaborated for industry as a whole, for branches of industry, for ministries, and for union republics; some indicators are also elaborated for oblasts (krays, ASSRs). They make it possible to analyze the reproduction of fixed capital. The latter include, in particular, the growth rate of fixed capital, coefficients of renovation and retirement of fixed capital, including machinery and equipment, the correlation of shares of active and passive fixed capital in total fixed capital.

The growth rate of fixed capital (in percent) is calculated as the ratio of fixed capital at the end of the period to fixed capital at the beginning of the period.

The coefficient of renovation of fixed capital (in percent) is calculated as the ratio of the value of new fixed capital activated in the ex post year (or in a specified period) to its value at the end of the year (period). The coefficient of renovation characterizes the share of new fixed capital in its overall volume on a specified day.

The coefficient of retirement (liquidation) of fixed capital (in percent) is computed as the ratio of the value of fixed capital retired as a result of dilapidation and depreciation, damage or natural disaster (i. e., capital finally retired from the production process) in the ex post year to its value on a certain date (beginning of year, period).

The reproduction of fixed capital is expressed in the fact that part of its value is transferred to the product and that when worn out it is replaced by new fixed capital. The depreciation of fixed capital, which is equated with amortization allowances, is determined by the value of the fixed capital which is partially transferred to the product. Hence it is of interest to analyze the amortization of fixed capital. Accordingly, the average coefficients of amortization allowances are calculated to this end by relating the actual amortization allowances to the full average annual value of fixed capital. The sum of amortization allowances for the entire period of functioning of fixed capital characterizes its overall depreciation in value terms, which can be determined as the

difference between the full initial value of fixed capital and its residual value. The coefficient of the general depreciation of fixed capital is calculated in the form of the ratio of the general depreciation of capital to its full initial value in value terms.

Amortization is computed in accordance with amortization allowances ratified in 1974. When these amortization norms were introduced, the standard service life of machinery and equipment in them was significantly reduced and the result was an increase in amortization norms on renovation. According to the Regulations on the Procedure for Planning, Calculating and Using Amortization Allowances in the National Economy, amortization is calculated for the actual service life of fixed capital.

If fixed capital, the normative service life of which (based on existing norms of amortization allowances) has expired is still in operation in industry, then the total calculated amortization will exceed the initial value of fixed capital. The result will be "overamortization" even though total amortization will not be reflected in the statistics.

The current question on the agenda is the question of incorporating in the statistics the indicator of amortization allowances for fixed capital whose normative service life has expired.

State statistical agencies are systematically observing the availability and movement of production capacities for the production of the basic types of industrial products in order to study more completely the active part of fixed capital (machinery and equipment) based on annually developed balances of production capacities.

The "Basic Directions of Economic and Social Development of the USSR in 1981-1985 and the Period Up to 1990" pose the task of "significantly expanding the scale of technical retooling and reconstruction of existing enterprises and re-outfitting them with new, highly effective equipment...."*

The balances of production capacities make it possible to analyze their production separately for the activation of new enterprises and for the expansion of existing enterprises; the reconstruction of existing enterprises; the technical retooling of enterprises; and other technical and organizational measures.

The most important direction of study of the qualitative composition of fixed capital is the accounting of the basic types of equipment. Indicators of special interest include: the age structure of existing equipment and the intensiveness of renovation (replacement) of equipment. They are necessary for analyzing the technical retooling of industry and are included in the "Report on the Availability, Movement and Replacement of Equipment" (Form No 75-tp) which is compiled at all industrial enterprises. The report contains data on the availability and movement (installation and retirement) of the most important types of equipment, on its

*"Materialy XXVI s"yezda KPSS" [Materials of the 26th CPSU Congress]. Moscow, Politizdat, 1981, p. 148.

distribution according to age, and the average age of equipment retired due to dilapidation and depreciation. Separate distinction is made for equipment installed to replace old equipment.

In the analysis of the technical retooling of industry, an important part is played by indicators of basic means of automation and mechanization (automated and mechanized flow lines, totally mechanized and automated divisions and shops, etc.), and by the distribution of enterprises according to the completeness of automation and mechanization of production processes.

Indicators of utilization of fixed capital can conditionally be divided into two groups:

1. General value indicators (profitability, output-capital ratio, capital-output ratio, capital per worker) that are used to characterize the use of fixed capital at enterprises, in production associations, branches and industry as a whole.
2. Particular--for the most part, physical--indicators that are used to characterize the use of fixed capital in individual branches, enterprises, or projects. They characterize output in physical terms (in tons, in running meters, etc.) per unit of productive capital.

One of the general indicators of utilization of fixed capital is the output-capital ratio which is measured in planning and accounting by output per ruble of average annual value of industrial fixed productive capital.

The determination of the output-capital ratio is based on the full value of the industrial fixed productive capital (without regard to depreciation) carried on the enterprise balance. No consideration is given to the value of fixed productive capital of other branches of the national economy (agriculture, capital construction, trade, public catering, etc.) or to the value of fixed nonproductive capital (housing and municipal services, education, health care, culture, art, science, etc.).

At the present time, it is the practice in planning and accounting in industry to measure the output-capital ratio to measure (gross) commodity output in rubles of average annual value of fixed capital. What is more, the output-capital indicator is computed on the basis of the volume of net output (gross output minus material expenditures).

In accordance with the decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979 "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing the Effectiveness of Production and Improving the Quality of Work," the appropriate ministries are being converted to the normative net output indicator.

The normative net output indicator is used both to determine the growth rate of the volume of production, labor productivity, the planning of the wage fund, the monitoring of its use, and to calculate the output-capital ratio. In the case of ministries (departments), associations and enterprises that have been converted to the normative net output indicator, the evaluation of performance and the summing of the results of socialist competition with regard to the fulfillment of plans for production volume, labor productivity and output-capital ratio are based on this indicator.

In this regard, it is expedient to incorporate the normative net output indicator and the output-capital ratio calculated on its basis in the "Summary Table of Basic Indicators Comprehensively Characterizing the Economic Activity of a Production Association (Combine) or Industrial Enterprise" (Form No 22).

When studying the output-capital ratio over time, it is necessary to secure the compatibility of basic data on output and fixed capital, i. e., when new comparable prices are introduced, when changes are made in the methodology of planning and accounting, and when enterprises are converted from one branch to another, these data must be recalculated for preceding years.

Profitability, determined as the ratio of profit or all accumulations (including turnover tax) to the average annual value of fixed productive capital, is also an important general indicator of the utilization of fixed capital.

The improvement of the structure of fixed capital, in particular the increase in the share of the active part of this capital in total capital, is of major importance in increasing the effectiveness of the utilization of fixed capital.

The structure of industrial fixed productive capital varies from one industrial branch to another, which is determined by the technological particulars of production in those branches. For example, in the extractive industry, the share of structures in the overall volume of fixed capital is significantly higher while the share of buildings and equipment is smaller than in the manufacturing industry. The largest share of the active part of fixed capital, i. e., machines and equipment, in the overall volume of fixed capital is in light industry and machine building. Nonetheless, in industry as a whole, the share of buildings and structures is still relatively large.

In the case of the renovation of fixed capital, the renovation and enlargement of their active part--machinery and equipment directly influencing the growth of output--are most effective. The more rapid the rate of activation of the active part of fixed capital, the greater is the influence exerted by them on the increase in the effectiveness of production as a whole. In determining the influence of the structure of fixed capital on the output-capital ratio, the output-capital ratio of their active part is calculated.

Since statistics lack the indicator of average annual value of fixed capital by type, data regarding this indicator can be calculated by relating the average annual value of all industrial fixed productive capital to the value of fixed capital at the end of the year and then by multiplying the result by the value of the active part of fixed capital at the end of the year.

In the process of comparing output-capital ratios over time, we must bear in mind the fact that they are influenced by structural changes, i. e., changes in the share of the output of individual enterprises in the overall volume of branch output; changes in the share of branch output in the output of all industry with different absolute levels of output-capital ratios for branches or for industry as a whole.

The activation of fixed capital to protect the environment has increased in industry in the last few years. Fixed capital for the protection of the environment at the beginning and end of the year and its average annual value in the ex post and preceding years are included in the report based on Form No 11 in order to study the influence of this capital on the output-capital ratio.

In a number of cases, an indicator that is the actual reverse of the output-capital ratio is used to determine economic effectiveness. This indicator is the capital-output ratio which characterizes fixed capital per ruble of output. The capital-output ratio is also greatly influenced by another economic indicator--capital per worker--which is calculated by relating the average annual value of fixed capital to the average work force in industrial production. This indicator characterizes technical inputs per worker.

The output-capital ratio in industry has been declining in recent years and as a result it is becoming increasingly important to make in-depth economic analyses of factors that determine the level and dynamics of the output-capital ratio and reserves for improving the use of fixed capital. The level and dynamics of the output-capital ratio depend in large measure on the degree of utilization of production capacities at existing enterprises.

The "Balance of Production Capacity" (Form BM) characterizes the availability and use of production capacities. It is compiled once a year by all industrial enterprises that have their own balance sheet. The "Balance of Production Capacity" is elaborated on the basis of calculations of production capacities which are a most important part of the technico-economic substantiation of the plan for industrial production.

Production capacity of an enterprise is understood to mean the maximum possible annual volume of production with the full utilization of production equipment and production area. The magnitude of an enterprise's production capacity is determined on the basis of concrete types of products and is expressed in physical or conditionally physical units while the capacity of certain types of production facilities is expressed in value terms. The production capacity of an enterprise is calculated on the basis of the capacity of leading shops, divisions and units. Calculations of capacity take into account all production equipment assigned to basic production shops.

The production capacity of an enterprise is calculated on the basis of technical or rated norms governing the productivity of equipment, production area, the labor-intensiveness of products with due regard to the application of progressive technology and the most sophisticated organization of labor for the entire product mix of an enterprise. Calculations of production capacities of enterprises with a continuous production process are based on a year's calendar time minus time that the equipment is out of operation for repairs or due to technological factors; calculations for enterprises with a discontinuous production process are based on calendar time for the year minus time spent on major overhauls, preventive maintenance plus days off and holidays. The calculation of production capacities of enterprises varies from branch to branch. Accordingly, ministries and departments develop appropriate branch instructions based on the Basic Principles in the Calculation of the Production Capacities of Operating Industrial Enterprises ratified by USSR Gosplan and the USSR TsSU [Central Statistical Administration].

Balances of production capacities make it possible to elicit production losses stemming from the underutilization of capacities and to determine their influence on the level of utilization of fixed capital.

The 12 July 1979 decree of the CPSU Central Committee and USSR Council of Ministers "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing the Effectiveness of Production and Improving the Quality of the Work" envisaged the creation of a system of progressive technical and economic norms for the planning of the economic and social development of the USSR. The first phase of this system also envisages, inter alia, the elaboration of norms governing the use of production capacities. Norms governing the use of the production capacities of existing industrial enterprises are elaborated by branch research and project-planning organizations of USSR ministries and departments for enterprises and facilities (groups) in accordance with the Guidelines on Determining Norms Governing the Use of the Production Capacities of Operating Industrial Enterprises and Facilities.

Branch instructions on the determination of the given norms are elaborated and ratified by USSR ministries and departments on the basis of guidelines ratified by USSR Gosplan. The elaboration of these norms will permit the more correct analysis of the utilization of capacities in various branches of industry and to elicit reserves for their optimal use. The ratified norms are implemented by USSR ministries and departments.

The scheduled activation and full utilization of capacities of new and reconstructed enterprises and facilities are among the most important ways of increasing the effectiveness of social production. At the present time, special attention is devoted to the question of bringing newly activated enterprises and facilities up to rated capacity in a shorter period of time.

The semiannual "Report on Output, Labor Productivity and Enterprise Cost of Production According to Projected, Ex Ante and Factual Data" (Form No 1-tp (Capacity)) has been compiled in the interest of observing the course of reaching rated capacity by newly activated enterprises and facilities. This report is compiled twice a year on a list of products specified by the USSR TsSU for enterprises and facilities activated or rebuilt during the current five-year plan and preceding five-year plans. This report makes it possible to analyze and monitor the course of attainment of projected indicators at new enterprises and facilities on the production of the most important types of products and to elicit the basic factors underlying the lag in reaching the given indicators. At the same time, special attention is devoted to analyzing the work of facilities that are put into operation on the basis of imported equipment.

Form No 1-tp is used to compile a monthly report on the most important facilities put into operation in the ex post or preceding years. The list of facilities for which the report is submitted is determined on a quarterly basis by the USSR TsSU and is reported to the TsSUs of union republics.

New norms have been instituted regarding the time allotted for bringing newly activated enterprises and facilities up to rated capacity and for reaching basic economic indicators. These new norms, which were instituted on 10 May 1978, were revised to reduce this time unlike their predecessors. Guidelines on Determining Norms Governing the Time Allotted for Bringing Newly Activated Industrial Enterprises and Facilities Up to Rated Capacity and for Reaching Economic Indicators were instituted on 29 March 1979.

The Guidelines state that the "rated capacity of an enterprise or facility is the potential for production or processing raw materials for a year (day, shift) corresponding to the productivity and operating routine of production equipment (machinery, equipment) according to the product mix and quality specified in the plan."

While in the past the stable duration of production was monthly, the new guidelines specify the following for enterprises with a discontinuous production process this duration is one month if the time required for reaching rated capacity is up to 12 months; the period of duration is two months if the time required for reaching rated capacity is more than 12 months.

In accordance with the new guidelines, when an enterprise (facility) is put into operation, the initial period of reaching rated capacity is 35-60 percent of rated capacity for enterprises with a long production cycle and 60-75 percent for enterprises with a short production cycle.

The initial period of reaching rated capacity is 10 days for enterprises with a short production cycle and a running-in norm less than 6 months; 20 days for enterprises with a running-in norm of 6-12 months; and 30 days for enterprises with a running-in norm of more than 12 months; this initial period is not more than 3 months for facilities with a long production cycle. The introduction of the initial running-in period enables enterprises to make a more correct calculation of the volume of production during the concrete period in accordance with the norms. The production volume established by the enterprises may not be less than the volume of production in the initial period of reaching the rated capacity.

In the case of rebuilt and expanded enterprises and facilities, the norms governing the duration of the time required to reach rated capacity are established on the basis of ratified norms for appropriate new enterprises. The norms are reduced depending on the magnitude of the increase in operating capacities: by 30 percent if the increase in capacity is over 70 percent; by 40 percent if the increase is 50-70 percent; and by 50 percent if the increase is less than 50 percent.

If the volume of production at rebuilt and expanded enterprises and facilities is increased less than 20 percent, the time required for these enterprises to reach rated capacity is not specified, and the volume of output is established in terms of rated capacity.

The guidelines make provision for calculating normative levels of rated production capacity and of reaching basic economic indicators (labor productivity, enterprise cost of production, profitability). The time required to reach basic economic indicators should essentially coincide with norms governing the reaching of rated production capacity at newly activated enterprises and facilities.

New instructions for compiling the report based on Form No 1-tp (Capacity) were ratified by the USSR TsSU on 11 July 1980. The instructions articulate the range of facilities on which the report is submitted--for facility that is activated or rebuilt during the current five-year plan or preceding five-year plans and that produces products in accordance with the product mix specified in the appendix to the instructions.

In machine building, the report based on Form No 1-tp (Capacity) is compiled only for enterprises (facilities) that produce products in accordance with the mix appended to the instructions. If a facility does not produce such products, a report based on Form No 1-tp (Capacity) is not submitted even though the activation of the facility does increase the enterprise's overall capacity for producing the given products.

It should be borne in mind that the 12 July 1979 decree of the USSR Council of Ministers on the additional broadening of the rights of USSR ministries and departments authorizes ministries to revise and re-ratify rated capacities (in connection with changes in product mix) with the consent of USSR Gosplan and USSR Gossnab and the subsequent notification of the USSR TsSU. In the past the rated capacity was changed only by the organ that ratified the acceptance of a facility for operation at the behest of the state acceptance commission.

Unlike earlier instructions, which permitted the recalculation of enterprise cost of production only with the introduction of new wholesale prices, under the new instructions the enterprise cost of production takes into account the introduction of new wholesale prices and rates, amortization norms, the rate of reimbursement of outlays on geological prospecting operations, wage rates, and changes in the methodology that serves as the basis for calculating the given cost.

When the enterprise cost of production is recalculated, norms governing the expenditure of raw materials, supplies, fuel and power are not corrected but are accepted at the level of the plan.

Data in the report based on Form No 1-tp (Capacity) reflect not only the under-utilization of rated capacity but also the reasons which are distributed under the following headings: unfinished construction and installation work, defective equipment, shortcomings in the organization of production and the operation of equipment, the lack of skilled personnel, planning errors, lack of coordination in the activation of capacities, low quality output, shortage of raw materials and supplies, electric power, water, and natural gas; marketing difficulties, and other factors.

The "Report on Basic Work Indicators of Industrial Enterprises (Facilities) Put Into Operation or Rebuilt Between 1971 and the Ex Post Year Inclusive" (based on Form No 1-op (Annual)) is used to study the influence of newly activated enterprises and facilities on the basic work indicators of industry. This report contains a system of indicators that characterize the volume of output in physical and value terms, the industrial production work force, the value of industrial fixed productive capital and its active part for the enterprise (facility) as a whole, output per worker, output-capital ratio and capital per worker.

The report based on Form No 1-op (Annual) makes it possible to analyze the level and dynamics of the output-capital ratio at new and rebuilt enterprises and facilities, to compare work indicators of newly activated enterprises and facilities and existing enterprises, to determine the share of the increase in industrial output at these enterprises, and to analyze the work of newly built enterprises and of rebuilt or expanded enterprises.

The utilization of concrete types of equipment in various branches of industry is studied in the process of analyzing the utilization of fixed capital and production capacities. Accordingly, once every 2-3 years machine building enterprises conduct one-day studies to ascertain the number of shifts in which metalworking equipment is in operation. The last such study was conducted on 15 May 1980.

Equipment utilization studies are also conducted in other branches of industry (wood processing, textile, knitted goods; prefabricated reinforced concrete production). The findings of these studies make it possible to examine a complex of questions associated with shortcomings in the utilization of equipment, to ascertain the frequency and causes of equipment idle time, the number of shifts in which equipment is operated, etc.

Statistics on technical and economic indicators of the work of industry contain a number of key indicators of equipment utilization that make it possible to analyze the utilization of the equipment inventory in terms of number, operating time and productivity. For example, in blast furnace operation, statistics make it possible to calculate the coefficient of utilization of the useful volume of blast furnaces in nominal operating time (KIPO); in open-hearth furnace operation-- the amount of steel produced per day per square meter of hearth bottom.

The "Report on the Coefficient of Shift Operation of Special-Purpose Metalworking Equipment" (based on Form No 1-tp (Shift Operation) has been introduced to facilitate the study of the utilization of most expensive, special-purpose equipment.

In order to raise the level of statistical study of fixed productive capital in industry, we must secure an integrated approach to the analysis of the reproduction of fixed capital and equipment, their technical level and the effectiveness of their utilization.

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INVESTMENT, PRICES, BUDGET AND FINANCE

NEW CLASSIFICATION OF DISTRIBUTION COSTS SOUGHT

Moscow VESTNIK STATISTIKI in Russian No 7, Jul 81 pp 52-53

[Article by Kh. Shadiyev, Samarkand: "A New Classification of Distribution Costs Is Needed"]

[Text] The decree of the CPSU Central Committee and USSR Council of Ministers entitled "Improving Planning and Strengthening the Influence of the Economic Mechanism on Raising Production Efficiency and Work Quality" (1979) defined a system of steps to further improve planning and management and bring them into line with the demands of developed socialism. Under contemporary economic conditions the system of qualitative and evaluation indicators that characterizes the increase in the efficiency and quality of work is becoming substantially more important for strengthening cost accounting (khozraschet). One of these indicators in the sphere of circulation is distribution costs. These costs are highly diverse and dissimilar with respect to economic content and character. They are subdivided by a number of different characteristics: the economic nature of the expenditures; the place of occurrence; sectors and trade systems; depending on functions performed; types of expenditures; nature of change.

The problems of optimizing the level of distribution costs taking into account socially necessary expenditures of live and embodied labor in the circulation sphere demand a more detailed classification of these costs, one that will make it possible to thoroughly establish the interrelationship and interdependence of conditional-variable expenditures and trade volumes.

For this reason, we feel, conditional-variable expenditures must be broken into two groups: costs that have a tendency (with growth in trade volume) to increase, and costs that have a tendency to decrease. In our opinion, the national economy as a whole benefits from increase in certain types of handling costs in the circulation sphere (for example, increasing expenditures for packaging, transportation of goods, organizing proper storage, or improving the sophistication of service and introducing progressive forms of service). Therefore, not all costs have a tendency to decrease, as is often stated in the literature.

The proposed classification of distribution costs was worked out using the example of the consumer cooperative procurement organizations. In these organizations

the costs that have a tendency (with growth in the volume of procurement) to increase are:

1. expenditures for rail, water, and air transportation of goods and products (of them -- expenditures for materials for interior rigging of railroad cars, for storage of freight at stations, wharves, ports, airports, and warehouses of transportation enterprises within the time limits established for shipping the freight, for expert examination and analysis of the quality of goods when they are transported, for illumination, snow removal, and general clean-up on sidings within the grounds of the organization and loading-unloading areas for goods and products when these jobs are done by organizations and enterprises in conformity with contracts concluded with the railroads);
2. expenditures for rail and water shipment of containers and packaging materials for procurements, for vehicle and draft animal shipment of products and goods, for vehicle and draft animal shipment of containers and packaging materials for procurements, for storage, dressing, sorting, and packaging goods and products and for maintenance of refrigeration units, for preservation, disinfection, and Ascoli testing of animal products and furs, for containers (of them -- expenditures for cleaning and disinfecting containers and for repair), deductions to the cadre training fund, and other general enterprise expenditures (for development, introduction, and operation of automated control systems and computer centers carried on the balance of the organization or enterprise);
3. amounts paid or to be paid to computer centers, machine accounting stations, and machine accounting bureaus not on the balance of the organization or enterprise for scientific research work done and for calculations related to planning, design, and production projects, expenditures for the operation of the organization's own machine accounting installations not on separate balances, expenditures of procurement organizations for temporary holding of purchased livestock and poultry until shipment, expenditures of procurement organizations to feed livestock during the time they are being transported by rail, water, and motor vehicle and when stock are driven from the procurement point to the slaughtering point, and monetary supplements due to kolkhozes and hunting brigades for organizing and managing hunting.

Among the costs that have a tendency to decrease with a change in the volume of procurement are wages (we have in mind maintaining excess personnel, incorrectly established pay rates, and the like), interest on credit, losses on goods within established norms, losses on goods above established norms owing to breakage, spoilage, and reduced quality, and other variable expenditures.

In addition to the above-mentioned expenditure subheadings which should have a tendency to decrease, conditional-constant expenditures should also decrease (because available reserves are drawn into circulation). In our opinion, a similar classification can be worked out for other sectors of the circulation sphere also.

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11175

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INVESTMENT, PRICES, BUDGET AND FINANCE

OUTPUT-CAPITAL RATIO DISCUSSED

Moscow VESTNIK STATISTIKI in Russian No 7, Jul 81 pp 53-56

[Article by A. Vetrov, Moscow: "The Measure of Output-Capital Ratio"]

[Text] In order to raise the output-capital ratio in sectors of the national economy, associations, and enterprises during the 11th Five-Year Plan, it is important to know what kind of a measure the output-capital ratio is.

We know that a measure unifies quantity and quality. But it is less well-known that a distinction is made among three types of measures: direct, system, and real.¹ This signifies the necessity of differentiating the structures of indicators viewed as a method of linking their formative elements applicable to levels of management of the economic system.

A system consideration of an object of statistical studies may be done in several typological forms. The first form is a statistical study of the linking of things and phenomena. It is used to establish the substantive relationship between two or more factors that influence the particular objects of study. In statistical practice, for example, change in the output-capital ratio is studied with due regard for a number of factors: increase in the shift coefficient of equipment work, reduction in the time required to incorporate production capacities, reduction in the unit cost of production capacities, an increase in the proportion of the active part of fixed production capital. The second form is identifying the real common ground of phenomena and processes, their common qualities or affiliation with a single system. Here the leading principle of study is the similarity or homogeneity of phenomena, and this is accomplished by grouping. The third form involves identifying the specific law (pattern) of the system of phenomena. In this stage of system analysis we encounter the problem of the relationship between the law and the measure or, in other words, with that aspect of the consideration in which the law is basically the measure. This typological form of system study is most closely linked to a real measure of the phenomenon.

¹ See V. P. Kuz'min, "Printsipy sistemnosti v teorii i metodologii K. Marksa" [The System Principle in the Theory and Methodology of K. Marx], Moscow, Politizdat, 1980, pp 29-46.

The pressing problem of scientific analysis of output-capital ratio is to disclose its real measure. We will define several approaches to solving this problem.

Suppose the output-capital ratio is the ratio of gross output to production capital:

$$\Phi_0 = \frac{P}{\Sigma \Phi_1},$$

where E is gross output and $\Sigma \Phi_1$ is production capital as the sum of advanced fixed and working capital.

Let us expand the numerator of this formula into its constituent parts:

$$\Phi_0 = \frac{P}{\Sigma \Phi_1} = \frac{c + v + m}{\Sigma \Phi_1},$$

where c is material expenditures; v is wages; m is profit.

Several different combinations of the indicators are possible.

Variation No 1. The output-capital ratio is a function of the average rate of turnover of production capital ($c + v/\Sigma \Phi_1$) and the profitability of production capital ($m/\Sigma \Phi_1$). We will designate the average turnover of production capital as K and its profitability as p' . Then $\Phi_0 = K + p'$. (1)

It follows from this formula that the average turnover of production capital and its profitability are factors of change in the output-capital ratio. This means that during economic analysis and control of the dynamics of the output-capital ratio computed by the index of gross output it is important to consider not only the rate of turnover of working capital, as is customary today, but also the average rate of turnover of all production capital.

Formula (1) can be written differently. It is apparent from an analysis of the difference between the norm of net profit of an enterprise (m') and the profitability of output (p') that the latter is a function of this norm and the cost structure of production (s), that is, the ratio of material expenditures to wages:

$$\frac{m}{v} - \frac{m}{c+v} = \frac{c}{v} \cdot \frac{m}{c+v} = s \cdot p'';$$

$$m' = \frac{m}{v} = p'' + p'' \cdot s = p'' (1 + s); \quad (2)$$

$$p'' = \frac{m'}{1 + s}. \quad (3)$$

At the level of sector management the difference between balance profit and profit from the sale of output can be ignored and then the relationship between

the indicators of profitability of production capital and output can be represented as follows:

$$\frac{m}{\Sigma \Phi_i} : \frac{m}{c+v} = \frac{c+v}{\Sigma \Phi_i} = K. \quad (4)$$

It follows from formula (4), considering formula (3) that: $p' = \frac{K \cdot m'}{1+s}$. (5)

Then formula (1) assumes the form: $\Phi_0 = K + \frac{K \cdot m'}{1+s}$. (6)

Thus, managing the dynamics of the output-capital ratio presupposes establishing a norm of average turnover of production capital, norms for net enterprise income and the cost structure of production, and norms for introducing these indicators into practical economic analysis. It is wise to use formula (6) at the level of sector management. It is especially important to keep this in mind in the process of carrying out the 12 July 1979 decree of the CPSU Central Committee and USSR Council of Ministers. When establishing assignments for reducing average expenditure of material resources for enterprises and associations, a policy must be followed, using this norm, that insures a tendency for the cost structure of production ($s = c/v$) to decrease. In other words, regulating the output-capital ratio at the sector level presupposes a balancing of assignments for reducing expenditure of material resources with change and expenditures for wages. It is also important to point out that the campaign to reduce the rate of turnover of working capital (without proper coordination of this process with the rate of turnover of fixed production capital) cannot insure growth in the output-capital ratio. Regulation of the output-capital ratio can only be effective where there is appropriate management of the average turnover of production capital.

Variation No 2. We will determine the measure of the output-capital ratio as the ratio of net output ($v + m$) to advanced production capital:

$$\Phi_0 = \frac{v+m}{\Sigma \Phi_i}. \quad (7)$$

We will divide all elements of formula (7) by v . Then

$$\Phi_0 = \frac{1+m'}{h}, \quad (8)$$

where h is the organic structure of socialist production.

It follows from formula (8) that the output-capital ratio will drop until the organic structure of socialist production starts growing. Managing the dynamics of h involves both capital investment policy and the challenges of realizing the highest goal of economic strategy. The capabilities of the association and enterprise to manage the output-capital ratio are not decisive. Therefore, it is useful to have such a measure of the output-capital ratio in mind when performing comprehensive national economic analysis. At this level of management the norm should be an inequality of the type:

$$v^0 > \Sigma \Phi_i^0. \quad (9)$$

where v^0 is the rate of growth of wages, and $\Sigma \Phi_i^0$ is the rate of growth of production capital.

As for enterprises, at them the object of analysis is primarily the efficiency of functioning of the work place. Therefore, it is advisable to measure the level of the output-capital ratio as the ratio of net output (normative net output) to the capital available per work place (Φ_{opm}), that is:

$$\Phi_o = \frac{1}{\Phi_{opm}} \quad (10)$$

where γ is net output.

Let us call this measure of the output-capital ratio the direct measure and give an example of calculating it (see table next page). It is apparent from the table that if the output-capital ratio at the enterprise is measured by the national economic method, as the size of the enterprise increases the efficiency of use of industrial production fixed capital steadily declines. The opposite tendency for output-capital ratio is observed when it is calculated by formula (10): with an increase in the size of enterprises the efficiency of use of industrial production fixed capital rises.

A synthesis of the direct and system measures of the output-capital ratio makes it possible to determine the formula for the real measure of output-capital ratio applicable to a consideration of the distinctive characteristics of the functioning of the enterprise. To do this corrections must be made in the formula $\Phi_o = 1 + m'/h$ according to methods of computing m' and h , to use m'' and h' in the calculation. We will represent m'' as the ratio of profit to wages calculated per one work place and h' as the ratio of the capital available per work place to wages calculated per work place. As a result, we receive the formula for the real measure of the output-capital ratio at an enterprise:

$$\Phi_p = \frac{1 + m''}{h'} \quad (11)$$

In economic meaning formula (11) reflects the relationship between the efficiency of functioning of live labor and the organic structure of production. The real measure of output-capital ratio at an enterprise is directly proportional to the efficiency of live labor (m') and inversely proportional to the magnitude of the organic structure of production. It should be observed that a change in the shift coefficient does not affect the magnitude of the organic structure of production, but it causes a change in the level of the norm of enterprise net profit for accounting purposes, when calculating this norm and the number of work places. In other words, the shift coefficient directly affects the efficiency of use of live labor ($1 + m''$), but influences the real measure of the output-capital ratio only indirectly.

On the methodological level the real measure of output-capital ratio (formula 11) differs from the system measure [formulas (1) and (4)] in the same way as system knowledge differs from metasytem, that is, postsystem knowledge. The significant difference in the latter is that together with structural and functional aspects characteristic of the measure of output-capital ratio in formulas (1) and (4), at the level of the real measure of output-capital ratio it is possible in principle to begin reflecting the interaction of objects of study in different systems (the work place, brigade, shop, association, and sector). Then analysis will show the rise in the efficiency of use of production capital. That is why, in our opinion, it is becoming necessary to work

Table. Level of Output-Capital Ratio by Groups of Enterprises of Sector (Hypothetical Data)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	Число предприятий	Среднегодовая стоимость основных фондов, тыс. руб.	Коэффициент загрузки на один рубль	Факт выпуска в год на одно предприятие, тыс. руб.	Предельная норма выпуска на одно предприятие, тыс. руб.	Среднегодовая стоимость основных фондов на одно предприятие, тыс. руб.	Загрузка на одно предприятие, тыс. руб.	Материальные затраты, тыс. руб.	Число рабочих мест	Загрузка на одно предприятие, тыс. руб.	Норма выпуска на одно предприятие, тыс. руб.	Среднегодовая стоимость основных фондов на одно предприятие, тыс. руб.	Коэффициент загрузки на одно предприятие, тыс. руб.	Факт выпуска в год на одно предприятие, тыс. руб.	Предельная норма выпуска на одно предприятие, тыс. руб.	Среднегодовая стоимость основных фондов на одно предприятие, тыс. руб.	Коэффициент загрузки на одно предприятие, тыс. руб.	Факт выпуска в год на одно предприятие, тыс. руб.
(A)	300	352500	1.35	4873	2083	9977	2813	8011	791	3.56	0.72	3.54	0.48	12.6	386	578.0	3.54	163
1,1-2,0	8	11831	1.45	882	361	549	488	1681	157	2.98	0.835	1.173	1.584	3.43	246	131.2	1.17	113
2,1-3,0	30	17049	1.39	1827	732	1586	1074	2433	353	3.07	0.703	1.478	1.150	4.54	402	244.9	1.48	185
3,1-4,0	50	33723	1.39	3138	1486	3201	1672	4108	485	3.43	0.875	1.914	0.980	6.63	475	424.9	1.91	222
4,1-5,0	62	57809	1.36	4004	1802	5614	2401	6573	687	3.49	0.867	1.338	0.713	8.17	490	439.0	2.34	196
5,1-6,0	54	69074	1.34	6034	2883	9431	3351	10315	854	3.31	0.803	2.814	0.639	9.84	610	764.1	2.81	273
6,1-7,0	39	58796	1.29	7564	3406	13933	4157	12253	1199	3.47	0.819	3.352	0.543	11.32	630	961.5	3.35	253
7,1-8,0	27	50386	1.32	9063	3816	19802	5242	13359	1413	3.71	0.728	3.777	0.457	14.01	646	1029.1	3.78	272
8,1-9,0	16	18367	1.36	5561	2534	13523	3026	9286	844	3.58	0.837	4.489	0.411	16.02	303	707.8	4.47	198
9,1-10,0	14	14747	1.25	4865	1971	13918	2853	10203	842	3.43	0.681	4.811	0.349	16.53	294	574.6	4.82	119
10,1-11,0	7	9304	1.24	3719	1117	13034	2601	5735	633	3.81	0.629	5.034	0.284	19.17	163	253.2	5.03	58
11,1-12,0	5	5445	1.46	8419	1965	16442	2854	13878	743	3.83	0.666	5.751	0.253	22.07	218	513.0	5.75	50
12,1-13,0	3	6486	1.38	11901	6235	36267	5756	26161	1566	3.67	1.063	6.301	0.330	23.11	519	1508.8	6.30	279

(B)

Key: (A) All Enterprises of the Sector;

(B) Enterprises of Sector Broken Down by Levels of Capital-Labor Ratio, in thousands of rubles of capital per person;

(1) Number of Enterprises;

(2) Average Number of Regular Workers;

(3) Shift Coefficient for Number of Workers;

(4) Net Output in Actual Prices Figured for One Enterprise, thousands of rubles;

(5) Profit from Sale of Output for One Enterprise, thousands of rubles, m;

(6) Average Annual Value of Industrial Production Fixed Capital for One Enterprise, thousands of rubles;

(7) Wages Calculated for One Enterprise, thousands of rubles;

(8) Material Expenditures, thousands of rubles;

(9) Number of Work Places;

(10) Wages Calculated per Work Place, thousands of rubles;

(11) Norm of Net Income, m';

(12) Cost Structure of Production, s;

(13) Output-Capital Ratio Calculated by National Economic Method, $\phi_0 = 1 + m'/h$;

(14) Capital Available per Work Place, thousands of rubles, ϕ_{opm} ;

(15) Output-Capital Ratio Calculated by Number of Work Places, $\phi_0 = \gamma/\phi_{opm}$;

[Key continued, next page]

[Key continued]

- (16) Ratio of Profit to Wages Calculated per One Work Place, m' ;
- (17) Ratio of Capital Available per Work Place to Wages (h') Calculated for One Work Place (Organic Structure of Production);
- 18. Real Measure of Output-Capital Ratio at Enterprise, $\phi = 1 + m''/h'$.

out a metasystem approach to analysis of the measure of the output-capital ratio.

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REGIONAL DEVELOPMENT

PARTY SECRETARY DISCUSSES DEVELOPMENT OF ASSR

Moscow EKONOMICHESKAYA GAZETA in Russian No 24, Jun 81 p 5

[Article by A.U. Modogoyev, first secretary, Buryat Oblast Committee, CPSU: "Great Plans Into Specifics"]

[Text] Accelerated development of the eastern regions which have vast natural resources is one of the main areas of efforts to provide for the rational location of industrial production facilities. This course was confirmed at the XXVI CPSU Party Congress in the form of specific plans and directives, the implementation of which will elevate the role of Siberia and the Far East in the country's economy. The resolutions of the Congress outline specific programs for the future development of production facilities in the Buryat ASSR for 1981-1985 and for the period to 1990. These documents are yet another vivid reflection of the Leninist national policy of the party. They define the nature and directions of further industrial, agrarian, and social development for Buryatiya. The tasks which they levy are crucial. We clearly recognize that the resolution of those tasks will require the highest levels of organization and concentration of all party committees, soviet and economic organizations, and of creative action on the part of the republic's workers. Only under these conditions can great plans be transformed into specific accomplishments.

Intensive Utilization of Capabilities

During the past 10 years, the republic has taken a major step forward. Its economic structure has expanded and become more rational, the level of industrialization has risen, and efficiency improved. The intensive utilization of all that has been achieved during previous development is one of the most basic directions for the efforts of the party committees and soviet and economic organizations in Buryatiya.

In its practical work to develop industry, the CPSU Oblast Committee (Obkcom) devotes particular attention to the fuel-energy sector. Questions pertaining to the out-stripping improvements in coal production and electrical power production have frequently been reviewed by the Obkcom bureau and plenum sessions. In the 10th Five Year Plan, the first phase of the Gusinozersk GRES, with 840,000 kilowatt capacity, has been placed in operation, which provided the capability to increase electrical power fourfold. The Kholbol'dzhinsk open mine was built, with an annual capacity of 3 million tons of coal, which will provide fuel for the power station. During the new five year plan, the fuel-energy sector will undergo further development: construction of the second phase of the Gusinozersk GRES, a new TETs in the capital of the republic, and the Tugnyusk coal deposits will be readied for development.

Through the introduction of new industrial enterprises, renovation, and the re-equipment of existing enterprises, production capacities have been expanded in many branches of industry. For example, production in machine-building and metal working enterprises in the republic rose by 76 percent during the 9th Five Year Plan, and by another 30 percent during the 10th Five Year Plan.

In analyzing the situation in industry, it must be noted, however, that the production capacities of virtually all the newly introduced enterprises are being developed at a slow pace. The first phase of the Gusinoozersk GRES and the Khobol'dzhinsk open mine operated at 66 and 91 percent of planned capacity respectively. At the Zagorsk Wall Materials Plant, after 5 years of operation, only 63 percent of the plant's capacities have been developed. The Khoronkhoyak and Shalutsk Mixed Feed Plants utilize only 70-75 percent of equipment installed, and the Ulan Ude Upper Knitwear Plant even a lesser percentage. New equipment is exploited slowly, and is poorly utilized at renovated enterprises. One of the reasons for this is the fact that plant managers frequently operate without the requisite perspectives, and live, so to speak, day-to-day, resolving questions of renovation out of the long-term context, and provide poorly for the training of qualified personnel.

Another reason is that many of the projects are introduced according to the so-called priority complex, cut to the limit by auxiliary services and shop projects, housing, and other social-cultural and domestic-service projects.

An enterprise built under such a simplified scheme lacks the capacity to attract qualified personnel, or to recruit the planned complement of workers. It was in this very situation that the Gusinoozersk GRES and Upper Knitwear Plant in the republic's capital, the "Buryatfermmash" Plant and other enterprises found themselves.

Organization

One of the important features is the development of and implementation of prospected natural resources in national economic circulation. Primary directions for the economic and social development of the country ratified by the XXVI CPSU Congress envisage specifically, that preparatory work be conducted to develop the Ozeroye polymetal deposit. Preparations are to be undertaken also for the development of other mineral deposits: Cheremshansk--high quality quartz sandstone, Oshurkovsk--apatite, Tugnuysk--coal, and others. Utilization of certain minerals, for example, the Cheremshansk sandstones, is directly tied to increased efficiency on the part of existing enterprises, reduced shipping to casting facilities in Siberia and the Far East of millions of tons of foundry sands from Kazakhstan and the Ural area.

The 11th Five Year Plan is a time of intensive renovation for our veteran enterprises: the Dshidinsk Wolfram-Molybdenum and the Ulan Ude Thin-Cloth Combines, and the "Elektromash" and the locomotive car repair plants. Here the technological level of production is changing, which increases efficiency, and raises production output.

A complex of social questions must be resolved through the development of large-panel housing construction capacities-which must increase twofold, increased production and improved quality in enterprises of the light and food industries, and in agriculture. The draft plans envisage construction over the 5 years of

1.7 million square meters of housing, schools accommodating 22,900 students, pre-school institutions for 12,700 children, 1000-bed hospitals, and of polyclinics capable of servicing 3,000 visits per shift.

Questions relating to the organization of efforts to further develop comprehensively the production facilities of Buryatiya during the Eighties in the context of the requirements of the party and the governments of the Soviet Union and the Russian Federation were recently discussed at a plenum session of the CPSU Obkom. The discussion of our tasks at the plenum, and other programs which we are now conducting, have a single purpose--to achieve a situation where a specific plan of action exists in every sector, in every labor collective for implementing assigned tasks. This enables primary efforts to be concentrated upon the main problem areas.

One example of such concentrated attention upon specific problems is the development in the republic of a comprehensive food program designed to fully provide the populace with agricultural products. This program contains measures to increase production of grain, potatoes, vegetables and feeds (fodder). The foundation of the program is consolidation of the production base for farming and feed production. A major portion of funds is being committed to achieve those goals. To elevate farming to the required level without stable mechanization personnel, however, is impossible. Consequently, the CPSU Obkom and Council of Ministers of the Buryat ASSR are resolving questions regarding expanded housing construction in rural areas. In 1981, the scale of construction here is growing sharply. Collectives from construction organizations and enterprises in the capital and other industrial centers are coming to the aid of the kolkhozes and sovkhozes.

Experience Teaches

The CPSU Obkom devotes chief attention to the thorough and focused organizational work of the party committees. Nothing progresses without effort and labor. Experience teaches that deficiencies in organizational work are at times the chief obstacle to further movement forward. Tasks levied are solved quite differently where plan fulfillment and achievement of outlined perspectives are organized in a thoughtful way, losing sight neither of major nor minor problems. Take, for example, the Novobryansk Repair-Mechanical Plant, a major enterprise in the industry. During the 10th Five Year Plan, the plant increased its production volume by a factor of 2.5, and labor productivity increased almost twofold. Currently, the plant collectives are working just as intensively, fulfilling and overfulfilling the plans of the first year of the 11th Five Year Plan.

How did this growth become possible?

The party organization and managers skillfully combine programs to accelerate scientific-technical advance, introduction of its achievements into production with a daily concern which provides for the intensive resolution of social tasks in the collective. Here, the problem of stable personnel and the introduction of new equipment have been resolved, and results in a constant improvement in working and living conditions for the people.

Together with a basic renovation program, equipping plant shops with the latest in equipment, and a significant increase in production capacities, a broad program

of housing and cultural-service institutions is underway. In a short period of time, kindergartens and nurseries have been built. Houses of Culture, athletic and hospital complexes, dining and ancillary facilities have been created. All this aids the party, labor union, Komsomol organisations, and plant management in establishing a situation in the collective of continuous labor enthusiasm, and to attain true successes in the fulfillment of plan tasks.

An expansion of this plant is envisaged during the 11th Five Year Plan. This task is not a simple one, but the CPSU Obkom has no reservations that the plant collective will cope with the task honorably.

In the current year, industrial enterprises in the republic must increase production by 6.7 percent. This requires intensive work from the very beginning of the year. However, results for industrial enterprise operations for the first months of 1981 indicate that in certain areas, the deficiencies of the previous year are slow to be eliminated.

Reflecting negatively upon the overall operational results of the republic's industries was the under-delivery of imported raw-materials for the association, "Thin-Cloth Combine", which resulted in a production shortfall of 10 million rubles. The "Zabaykalles" Association failed to receive the required number of rail cars throughout the entire first third of the year. A "major contribution" was also made by limitations in electrical power supply. A particularly low level of state planning discipline in a number of transportation enterprises was the chief reason that part of the plants and factories were poorly prepared for smooth operations from the first months of the new five year period. Specifically, the Ulan Ude department of the VSZhD (Eastern Siberian Railroad), train movement schedules are not being met, and enterprises are short a significant number of cars. There are numerous deficiencies in the operations of truck and air transportation.

A thorough analysis of the reasons underlying the disruptions in plan tasks and the development of specific programs to improve operations is the most reliable approach. To cite an example, this year witnessed a downturn in the operations of the Selenginsk Paper-Cardboard Combine, resulting in a shortfall in many product areas. Enterprise debt was in the millions of rubles. The CPSU Obkom and the Union Ministry agreed mutually to investigate the reasons for the disruptions in an effort to aid the collective to again improve production. A well-directed analysis and the implementation of specific programs to improve operations, which we embrace, will also assist other enterprises.

In a meeting with leaders from the Georgian SSR, comrade L.I. Brezhnev emphasized that all efforts must now be concentrated upon fulfilling the resolutions of the congress. This directive is fully supported by the oblast party organization, now working toward the fulfillment of the tasks of the 11th Five Year Plan.

8851

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REGIONAL DEVELOPMENT

ECONOMIC DEVELOPMENT OF FAR EAST

Riga SOVETSKAYA LITVA in Russian 5 Jun 81 p 2

[Article by Valeriy Chichkanov, doctor, economic sciences, director, Economic Research Institute, Far Eastern Science Center, USSR Academy of Sciences: "The Far East: Outlook For Economic Development"]

[Text] The following task has been levied by the XXVI CPSU Congress for the eighties--"Accelerate the expansion of the country's eastern regional economic potential". A major role in fulfilling this task will be played by the Far East, with a territorial area of over 6 million square kilometers. This economic region contains two krays, 4 oblasts, and one autonomous republic (the Yakutsk ASSR).

The Far East is a land of remarkable contrasts: tundra, permafrost over 9/10 of the area, and volcanoes in the North, and subtropics in the South, with flowering lotuses and wild grapes. It is not only its vastness and exotic nature which differentiate the Far East from the country's other regions. The Far East is surprisingly rich in natural resources. Timber reserves here number in the tens of billions of cubic meters. The far eastern taiga provides 15 percent of the country's fur production, including the valuable sable pelt. Almost one-half of the fish products for the Soviet people is produced by this plentiful kray. Fish, timber, and fur symbolize its economy.

Gold and diamonds are mined in the Far East, as are hard and brown coals, tin and iron. Oil and gas deposits have been discovered. True, they are located as a rule in remote areas having a pronounced continental climate. Nevertheless, the Soviet people are developing the natural resources of this vast kray.

Industrial production volume during the last 20 years here has increased almost fourfold. The Far East is a highly industrialized region, where 76 percent of the population is engaged in industry, transportation, and construction. Machine-building, mining, timber-chemical industry, ship-building and ship-repair, wood-processing, transportation, and food industries are undergoing accelerated development. In the major industrial centers, Khabarovsk, Komsomol'sk-na-Amure, and others, steel is being produced, ships are built, automated machines and refrigerators are being produced, furniture made, china ware and other consumer products are being made.

Agricultural production displays a parallel growth. In the south of the Far East, a major rice-cultivating zone is being established in the marshy lowland areas of Lake Khanko. Soya is being grown in the chernozem plains of the Amursk Oblast, with approximately 70 percent of all soya sown in the USSR. Further development is envisaged in the 11th Five Year Plan in agriculture to more fully satisfy the population's needs through local production.

With consideration given adverse natural-climatic conditions here and the remoteness from central regions of the country, preferential conditions are being established regarding workers' living and working in this area. Residents of the Far East are compensated with premiums (allowances) to their wage (from 20 to 100 percent depending upon the region), and round-trip fees are paid for trips to rest areas. Housing construction is undergoing rapid development in the region. During the 8th Five Year Plan, 238 new apartment units were turned over for operation daily, and this figure grew to 300 units daily in the 10th Five Year Plan.

The map of the Far East is spotted with the symbols of new construction sites. Foremost is the BAM section from Komsomol'sk-na-Amure to Tynda, the construction of which will be completed during the current five year plan. In the rail line zone, the eastern part, which runs from Komsomol'sk-na-Amure to Ural and is now operational, worker settlements and cities are under construction. During the last five year plan, the so-called "Little BAM" (Tynda-Berkakit-Ugol'naya) was placed in operation. Yakutiya saw its first rail line in operation. The country obtained reliable access to very rich coking-coal deposits. Based upon those deposits, the Yuzh o-Yakutsk territorial industrial complex is being established, which will include an open-cut mine (with projected annual production of 13 million tons of coal), a concentrating plant, and the Neryugrinsk GRES.

In the Pacific Ocean coastal region, a new phase of the port of Vostochnyy has become operational. A second phase of the port is now under construction in the Wrangel Bay area, featuring the establishment of major ocean gates for the country. A gigantic transcontinental container line runs through Vostochnyy, connecting the ports of Southeast Asia with Western Europe. Vostochnyy is called the "sea gates of BAM".

The hydro power resources of the Far East are vast: they constitute more than one quarter of the all-Union total. The Zeys GES is operational, and the construction of the Bureysk GES is to be expedited; the Kolymskaya GES is rapidly being built far to the north under extremely adverse conditions.

The ocean sectors will occupy a substantial place in the economy of the Far East, utilizing the economic resources of the Pacific Ocean and the Far East seas. In conjunction with this, maritime transport and port facilities are under development.

The social infrastructure complex will undergo more intensive development than during the recent past. Public consumption resources will be expanded, and additional premiums will be implemented in the wage area.

Development of the Far East will expand its economic contribution to the economic potential of the Soviet Union and will promote increased welfare of the Soviet people.

REGIONAL DEVELOPMENT

NEW PLANNING INSTITUTE FOR HIGHWAYS ESTABLISHED

Baku BAKINSKIY RABOCHIY in Russian 12 Jun 81 p 4

[Correspondent E. Daminova interviews F. I. Asadov, director of the Azdorproyekt [Azerbaijan Planning Institute], the "New Creators of Roads in the Republic"]

[Text] The institute was organized on the basis of the planning and surveying bureau of the Ministry of Motor Road Construction and Operation of Azerbaijan SSR. At the request of our correspondent institute director F. I. Asadov describes the work and structure of the new institution.

"A good road cuts the journey in half," says the popular wisdom. It is particularly urgent in our time, when there are more and more motor vehicles in use and a considerable proportion of the national economic freight is hauled by motor transport.

The establishment of our institute was dictated by the recent intensive development of motor vehicle traffic and consequently the acute need for growth of the network of roads in the republic. Since 1975 the Ministry of Construction and Operation of Motor Roads has had under it a planning and surveying bureau. But time has produced the need for the accomplishment of tasks of a larger scope than those which were assigned to this organization. So our planning institute came into being. In addition to the state, republic and local roads, we will plan bridges and industrial and civil installations.

Our collective is still a small one. But it will be enriched with capable young people and experienced specialists and those who are now coming to us will form the backbone of the future large collective.

[Question] Fuzad Ismailovich, describe, if you will, the geography of the work being done by your specialists in the republic. Are there difficulties in the planning of the roads because of the natural conditions and the difficult terrain?

[Answer] The associates of the institute are now working on 55 projects dispersed throughout the territory of Azerbaijan. They include bridge crossings over the rivers Bargushadchay in Kubatlinskiy Rayon, Terterchay in Kel'badzharskiy Rayon, Gasans in Kazakhskiy Rayon, and many others. I might mention three of the most important and most difficult highways, which connect Lenkoran' with Lerik, Yardymly with Daman, and Barda with Istisu. Incidentally, there is a small side light in

the story. The roads which connect Lenkoran' with Lerik and Masally with Yardymly were planned back in the 1930's. After 50 years we will rebuild these roads, which have served their time.

Quite a bit of trouble and a multitude of varied decisions in the search for the optimum ones led us to the existing Neftechala-Zharskiy highway. The road leading to the spit where the village of Zharskiy is located is being washed away by the sea. The planners gave a great deal of thought to the question of how to preserve and strengthen the road leading to the village and how to make it more dependable and a solution was found.

[Question] Do you maintain creative links with the country's oldest and hence its more experienced planning institutes? What is being done in this respect?

[Answer] Yes, we have the closest and friendliest contacts with the planning institutes of Moscow, Minsk, Vil'nyus and other cities. The workers of Azdorproyekt go out on creative detached duty assignments in these cities. In a number of the planning projects of our institute many valuable suggestions are made by these colleagues. Thus, we are getting substantial help from the Vil'nyus architects, who have considerable experience in the aesthetic structuring of motor roads. Together with the Litgiprodor [Lithuanian State Institute for Road Planning] we are beginning the preparation of a plan for the rebuilding of the Akhsuinskiy pass. It will be provided with all the features which characterize a modern main line--observation platforms, parking areas, and camping grounds. We are the first to use the landscape method of planning. The road is being considerably expanded and in some places it is being straightened. In order not to disrupt the beauties of the mountain's natural environment, the architects are trying to fit the highway into the landscape of the pass and to make the road an adornment for it.

The motor roads now satisfy (and moreover not in full measure) only the utilitarian requirements. We regard the road architecture as one of the still latent reserves for improving the organization of the traffic and enhancing its safety and comfort. It is also important to create an enduring image for the road, one which is in keeping with the national and traditional (in the best sense of this word) characteristics of each region.

Addressing myself to the builders of the motor roads, I would say that the use of modern methods of landscape planning and road construction cannot be effective without a careful alignment of the road structures and good quality finishing work--especially the public roads sector. These are precisely the features which primarily determine the character of the road as an element of the landscape.

[Question] Fuad Ismailovich, what are the tasks facing your planning organization in the 11th Five-Year Plan?

[Answer] The modern development of road construction, which was the object of a great deal of attention from the 20th Party Congress, requires that we examine the many views that are prevalent among us with respect to the planning of the motor highways. We are using the new type of surface. We have made it mandatory to have parking areas and camping grounds where the weary driver can rest in the shade of trees after a fatiguing trip. The protection of the natural landscape is also

being strictly observed. We now have more of the higher category of roads. We are also building roads of the superior quality in the republic.

In this regard there has been a considerable increase in the volume of surveying work. Compare: in 1975 the yearly plan for the work of the planning bureau comprised 325,000 rubles and in 1981 the plan reached 815,000 rubles. The volume of planning work will rise sharply in the future.

The inventory of motor vehicles in the republic has now undergone a significant increase. Our life constantly requires new, improved roads which are safe for drivers and pedestrians. And our job is to make them fulfill these requirements.

7962

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INTRODUCTION OF NEW TECHNOLOGY

STATISTICS IN TECHNOLOGICAL POTENTIAL ANALYSIS

Moscow VESTNIK STATISTIKI in Russian No 7, Jul 81 pp 48-52

[Article by K. Reshetinskiy and O. Savel'yeva, Moscow: "Scientific-Technical Potential and Statistics"]

[Text] During the 10th Five-Year Plan the pace of scientific-technical progress picked up and the scale of introduction of new technology expanded. In the Accountability Report of the CPSU Central Committee to the 26th party congress General Secretary of the CPSU Central Committee Comrade L. I. Brezhnev emphasized: "The country has entered a new decade with mighty economic and scientific-technical potential." The principal challenge of the 11th Five-Year Plan is to insure continued growth in the well-being of the Soviet people on the basis of stable, consistent development of the national economy, acceleration of scientific-technical progress, and switching the economy to the intensive path of development. To meet this challenge will require dynamic and proportional development of the entire economic complex of our country. An inseparable part of it is its scientific-technical potential (STP), which can be defined in most general form as the resources of scientific-technical development. The document "Basic Directions of Economic and Social Development of the USSR for 1981-1985 and the Period Until 1990" envisions a vast program of steps to improve production on the basis of the latest scientific and technical achievements. Special attention will be devoted to deepening the tie between science and production and realizing the results of scientific research as quickly as possible. For this reason, the main function of STP is to insure, through its active use, that level of scientific and technical development in the national economy which fully meets the contemporary requirements of the scientific-technical revolution.

Because science and engineering are today playing and will in the future continue to play an ever-growing role in national economic development, the interest of specialists in the problem of studying STP is understandable. But the primary attention is focused on the political economic aspect of studying this category, as well as on the problems of controlling specific elements of STP: planning scientific research, managing the scientific collective, and so on. The problems of a comprehensive quantitative characterization of STP have been studied very little. Yet this is a very important question. Without a detailed characterization of this sort, there can be no qualitative analysis of the level of development of STP achieved by the country, no prediction of further growth, and no development of concrete plan assignments.

Determining the numerical parameters of STP is a problem for socioeconomic statistics, because its functions include quantitative description of mass processes or phenomena inseparably linked to a qualitative aspect.

One of the fundamental methodological issues that must be resolved for the statistical study of any process or fact is to define the subject of the study. At the present time the term "scientific-technical potential" is widely used. But no single definition of STP has been developed, and views differ considerably on what it means.

In our opinion, the most logical definition of STP is the following: the scientific-technical potential of a country is the aggregate of labor, material, financial, informational, and organizational resources that it possesses for carrying out scientific research and development and introducing the results of it in public production. Thus, STP is the available resources of the science-production system, whose elements are pure research, applied research, experimental design development, and introduction.¹

STP combines two large groups of resources (the components of STP): scientific potential, and introduction potential. Scientific potential, in its turn, encompasses the resources of the first three stages of the science-production system. Introduction potential covers the resources of the introduction stage. Each of these components of STP in turn combines the same resources which we called the constituent parts of STP.

Because STP is one of the socioeconomic categories with a complex composition, during quantitative measurements the problem arises of distinguishing it from other component parts of the potential of the country as a whole; in other words, those types of activities or organizations which should be classed with science (and correspondingly, their cadres, material base, and so on with scientific potential) and the types of activity which relate to the process of introducing the results of scientific research and experimental design in public production must be defined.

In our view, there are three sets of objects, differing by the composition of their units, which combine those subdivisions of the national economy that may be the object of observation during statistical study of scientific potential. These three are the sphere of science, the independent sector of the national economy known as "science and science service," and the set of scientific institutions. The most complete of these sets is the first, which encompasses all scientific activity in the country and, consequently, includes the sector of "science and science service" within itself.

The process of introducing the results of scientific research and experimental design into production combines several types of work: incorporating production of the new output; introducing new means of production and new technology; and, improving means and methods of organizing and controlling production. To the

¹ The first three elements are often combined in the one term "scientific research and experimental design work" (NIOKR).

extent that the results of scientific research and experimental design are realized basically at enterprises of the production sphere, so it is precisely the enterprises and organizations of this sphere that are the object of statistical examination. Within the framework of this object it is processes related to the types of introduction work listed above that are subject to investigation.

An important question concerns the place of the statistics of STP among the other subdivisions of statistical science. In our opinion, the different fields of statistical study of the process of scientific-technical development of the country can be encompassed by the concept "statistics of scientific-technical progress." Within it it is useful to identify three basic parts: the statistics of science, the statistics of introduction of the results of scientific research and experimental design, and statistics on the technical level of production. The objective of the statistics of science is to characterize the process of formation of knowledge. The statistics of introduction reflects chiefly the process of translation of this knowledge into the sphere of material production. Finally, the statistics of the technical level of production is expected to identify the contribution of science and engineering to the development of productive forces. In this case the statistics of STP combine to form relatively independent and, at the same time, interrelated parts: the statistics of scientific potential and the statistics of introduction potential. It seems to us that statistical study of STP is one of the areas of economic (national economic) statistics, because it is the sector that engages in quantitative study of the most general, synthetic socioeconomic concept and categories inherent in socialist reproduction as a whole.

One of the principal tasks of the statistics of STP is comprehensive statistical study of the volume and quality of resources allocated by society for scientific research and experimental design, and the introduction of its results into production. The subject of study is labor, material, financial, organizational, and informational resources for scientific-technical development. The object of observation may be, depending on the specific purpose of the study, the economy of an entire region or country, a sector of the national economy, a particular scientific organization, a production enterprise, and so on.

Two basic directions can be identified on statistical study of STP: evaluation and analysis. By evaluation we mean quantitative measurements of the level and qualitative composition of the particular component of STP or the aggregate of components. The job of analysis is to disclose the essential features and meaning of the results of measurement, thus providing a deeper and more thorough picture of the subject of the investigation. Analysis may be done in several directions. We have identified the main directions as investigation of internal relationships among different elements of the subject of study and studying time changes. Evaluation is the starting point for analysis, because it gives the investigator the necessary data for thorough consideration of the subject of study, identifying its distinctive characteristics, and establishing developmental trends.

Thus, the statistics of STP are expected to resolve the following basic problems: define the methodological foundations of the statistical study of STP as a whole;

work out a system of statistical indicators for evaluation and analysis of STP; work out a methodology and technique for calculating particular indicators; define the basic directions of evaluation and analysis of STP and develop their methodologies; form a statistical information system for evaluation and analysis of STP.

Statistical study of STP is only possible, we believe, by investigating the corresponding system of statistical indicators, because this potential is a complex aggregate that comprises a significant number of elements. This is exactly why a large number of interrelated statistical indicators that reflect different aspects of the aggregate under study is required to determine the level and qualitative composition of its components. In aggregated form the system of indicators may be proposed as follows:

- a. the total volume of STP and its components;
- b. the structure of resources for scientific-technical development according to distinct characteristics or combinations of them (social, sectorial, type, and the like);
- c. location of resources throughout the country;
- d. the dynamics of STP as a whole and its individual parts;
- e. the efficiency of use of STP.

It is obvious that the system of indicators of STP should correspond to the content of the subject of study. Therefore, it is essential to identify in it as many groups (subsystems) of indicators as there are component parts of STP combined in the two relatively independent parts (sections): the system of statistical indicators of scientific potential and the system of statistical indicators of introduction. Each of them, in turn, consists of five groups of indicators that characterize particular components of scientific potential or introduction potential.

The full configuration of the proposed system of indicators is very large. For convenient practical use, therefore, it is advisable to break down the indicators of each group into primary ones, which offer the most significant information about the subject of investigation, and supplementary ones, which describe more common and less significant features of the subject of study.

Another problem also arises: does use of a system of indicators signify a rejection of a generalized quantitative description of STP? After all, the indicators included in the system may change in different, sometimes conflicting directions. This provides very good ground for the proposals to construct an integrated indicator of STP which would, as much as possible, concentrate the different aspects of this phenomenon and serve to identify the total volume of STP and its general dynamics. The integrated indicator is not in conflict with the system, but rather heads it, as an inseparable part which significantly broadens the possibilities of economic statistical study of STP. It is obviously

possible to construct not just one integrated indicator of STP as a whole, but a series of similar generalizing indicators that characterize scientific potential, introduction potential, and individual components of each.

The issue of practical calculation of the integrated indicator of the level of the country's STP is one of the most highly debated questions today. But the great potential it has for analysis in identifying basic trends in the development of STP obligate us to search for ways to solve this problem.

There is no question that the problem of constructing an integrated indicator that characterizes a major socioeconomic object is difficult. In the first place, such an indicator cannot reflect the object in the full aggregate of its properties. This is chiefly because in the majority of cases the state of the object is determined not only by the level of development of particular elements that make up the object but also the system of interrelationships among them. It is very difficult to reflect these interrelationships when constructing an integrated indicator. In the second place, such an indicator cannot reflect the size of the object with a high degree of precision. The specific reason for this is that during construction of the indicator it will be necessary to express a number of typical qualitative parameters in quantitative terms, which inevitably gives the calculation a certain conditional quality.

We feel nonetheless that these negative aspects are not sufficient to cause us to reject the idea of constructing such indicators. Strictly speaking, the integrated indicator does not describe the object itself; it describes a more or less reliable model of it. No model is completely adequate to reality. While admitting that there are errors in the models, we still do not have to throw out the integrated indicator because it does not insure high precision. The sphere of use of generalizing indicators is somewhat limited. With respect to the evaluation and analysis of STP the sphere of use of the integrated indicator chiefly involves identifying the dynamics of the total volume of STP.

In our opinion, the following can be considered an acceptable formula for an integrated indicator of STP:

$$Q = \sum_{i=1}^n \sum_{j=1}^{m_i} a_i \cdot a_{ij} \cdot l_{ij}, \quad (1)$$

- where Q — integrated indicator of STP;
 l_{ij} — particular indicator j of the group of indicators that characterize component i of STP;
 a_{ij} — significant (weighting) factor of indicator l_{ij} ;
 a_i — significant factor of group of indicators i ;
 m_i — number of particular indicators in group of indicators i ;
 n — number of groups of indicators (number of component parts of STP).

This formula for an integrated indicator is the result of convolution of the set of particular indicators characterizing different components of STP. It is necessary to include weighting factors in the formula because different elements of STP have different degrees of influence on the total volume.

Thus, we can say with confidence that a change in the amount of expenditures for science has a greater impact on the total volume of STP than change in the age structure of scientific cadres. The weighting factors should reflect precisely this, the importance of a change in each particular component of STP for change in the total volume.

For a concrete computation of the indicator Q the following problems must be resolved: find a way of reducing the different components to a single dimensionality, establish a methodology for calculating weighting factors, and choose the specific statistical indicators included in the calculation of indicator Q.

The first problem is the most complex. In general form l_{ij} is a particular statistical indicator, one of those that characterize component i of STP. It could be the number of persons employed, expenditures, amount of funds, and the like. It is impossible to reduce so many qualitatively different particular indicators with different dimensionalities to one formula because, of course, statistical measurements can only be made within the limits of a qualitatively homogenous set. Therefore, the problem arises of finding that common quality within which it is possible to compare the different particular indicators. By this same token, the problem of a common measure for all the particular indicators included in the calculation will also be solved.

Some say it is possible to use a hypothetical economic (monetary) evaluation of the elements of STP as a common measure. In many cases (for example evaluating scientific cadres) such an estimate should be in the nature of a calculated quantity equivalent to expenditures for the formation of these components and their use in the science-production system. But many difficult-to-solve problems arise in practical implementation of this technique.

It is more feasible in practice to take a different approach in which the degree of convergence of the particular object to a certain standard is taken as the common quantity within which particular indicators will be commensurate. In this case

$$l_{ij} = \frac{l_{ij} \text{ actual}}{l_{ij} \text{ standard}}, \quad (2)$$

where $l_{ij} \text{ actual}$ is the actual value of the given indicator; and $l_{ij} \text{ standard}$ is the value of the given indicator for a standard object.

The planned value of the given indicator can be taken as $l_{ij} \text{ standard}$. But a number of elements of STP are not planned. Therefore, it would be preferable to construct a mathematical economic model of STP and optimize it. The optimal values of the indicators would represent $l_{ij} \text{ standard}$. Indicator Q, therefore, in this case reflects the achievement of STP of that optimal level which is

possible in the given socioeconomic conditions. In this case the first stage should be construction of a mathematical economic model of STP. This problem is far from being solved. Therefore, despite the attractiveness of this approach from the methodological standpoint, the conditions to realize it do not exist at the present time.

The most realistic approach from the standpoint of practical calculations is the index approach to measuring the particular indicator l_{ij} , which in this case represents the ratio of the value of the concrete statistical indicator attained to its base value. The actual value of the indicator for the preceding year or for a certain year adopted as the base may be used as the base for comparison.

The most acceptable technique for calculating the weighting factors a_{ij} and a_i is the expert estimate method, which creates the possibility of formalizing certain qualitative information and representing it in quantitative form. Specifically, the variation of this technique involving paired comparisons is desirable.

Calculation of the integrated indicator for a number of years following the proposed techniques will allow a graphic representation of the direction and rate of change in the total volume of STP. The proposed indicator is a comprehensive one, that is, similar indicators may be computed for each of the components of STP and for scientific potential and introduction potential.

The basic feasibility of this approach can be demonstrated by the example of calculating an integrated indicator of the cadre (labor) component of scientific potential (L_1):

$$L_1 = \sum_{j=1}^{m_1} a_{ij} l_{ij}. \quad (3)$$

The system of statistical indicators that characterizes scientific cadres is quite broad. Five particular indicators were acknowledged as most significant ($m_1 = 5$), namely: number of persons employed in the scientific sphere; number of persons employed in the sector "science and science service"; number of scientific workers, number of highly qualified scientific workers (with learned degrees and titles), and number of scientific workers in the optimal age bracket. The chain and base indexes of these indicators were the components of l_{ij} in formula 3. The indicator was computed in two variations, using the previous year (L'_1) as a basis of comparison and using 1970 (L''_1). An expert group of specialists engaged in study of the problems of economic and scientific-technical progress was formed to determine the weighting factors a_{ij} . The experts used the paired comparisons method. Following the algorithm for calculation by this method, the experts were asked to make a paired comparison of the significance of each of the components used in the calculation for growth in the total volume of the labor component of STP. The survey was done by means of questionnaires. The individual weighting factors obtained were corrected with due regard for the competence of each expert and group estimates of the significance of the particular statistical indicators were obtained on this basis.

The results of the calculation were as follows:

Indicator \ Year	Year									
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
L_1'	—	107,4	106,8	105,5	103,2	103,2	103,0	102,6	102,2	103,2
L_1''	100,0	107,4	113,7	120,0	126,3	132,0	135,8	140,0	143,5	148,0

This calculation is experimental in nature and is given here to confirm the practical possibility of computing an integrated indicator of STP on the basis of formula (1). At the same time, we do not deny the possibility in principle of other approaches to determine the integrated indicator of STP, in particular measuring it in a cost version, not a dynamic version.

Quantitative studies of scientific-technical potential will make it possible to obtain significant statistical information on available resources in the country for scientific-technical development. This will then serve as the basis for improving the planning and forecasting of scientific-technical progress.

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